ENGIN

CAT. FOR
ENGINEERING

REPORT
TO
DEPARTMENT OF PUBLIC WORKS
ON THE
S O U T H E R N C R O S S I N G
OF
SAN FRANCISCO BAY

December 1955

Division of San Francisco Bay Toll Crossings
Department of Public Works
State of California

ENGR.

PART I

INTRODUCTION

SCOPE

The Southern Crossing of San Francisco Bay was authorized by the Legislature of the State of California in its 1953 Session. (See Article 2, Chapter 2, Division 17, of the Streets and Highways Code -- Chapter 1056, Statutes of 1953, as amended by Chapter 304, Statutes of 1955 -- Refer to Appendix A).

This Southern Crossing, shown on Figure I-1, is to extend from the vicinity of Third and Army Streets in the City and County of San Francisco to Bay Farm Island in the City of Alameda, County of Alameda. On the San Francisco side of the Bay, certain designated approaches to be constructed in conjunction with the Southern Crossing are situated entirely within the limits of that City, while on the East Bay side the approaches are situated in both the Cities of Alameda and Oakland.

Under date of December, 1954, this Division submitted to the Department of Public Works a "Progress Report" on the engineering work accomplished to that time. This second report summarizes all of the engineering and financial studies that have been made to date by the Division and its consultants.

All information, both textual and illustrative, included in the 1954 Progress Report has been brought up to date and included herein.

HISTORY OF SOUTHERN CROSSING

The concept of a southern crossing of San Francisco Bay, considered in this report as connecting the City and County of San Francisco with Alameda County, is not new. Various locations for such a crossing have been discussed by engineers and laymen for almost a century. Some of those locations reported on by various governmental bodies during the past two decades are shown on Figure I-2.

In the "Report of Board of Engineers, Transbay Bridge, San Francisco," dated May, 1927, a direct crossing between Rincon Hill, San Francisco, and the western end of the Alameda Mole, Alameda, was recommended to the City of San Francisco in preference to other lines studied.

In the "Report of the Hoover-Young San Francisco Bay Bridge Commission," dated August, 1930, three of the location studies involved bridges in the general vicinity of that particular Southern Crossing which is the subject of this report.

The recent history of a southern crossing dates from 1941, when a Joint Army-Navy Board was convened, pursuant to H.R. 158, 77th Congress, 1st Session, to investigate the need and feasibility, from the standpoint of national defense, of constructing a bridge between Hunter Point and Bay Farm Island. Two plans were studied, (1) a high-level bridge passing 2,000 feet north of Point Avisadero (Hunter Point), and (2) a low-level lift bridge passing 8,000 feet south of this Point. Both lines

converged at a common terminus on the southwest shore of Bay Farm Island. At that time no substantial reasons could be advanced showing that such a structure was necessary from the standpoint of national defense, and the Board recommended against construction of a bridge in its report dated November 8, 1941.

Following the end of World War II it became evident that increasing vehicular traffic on the San Francisco-Oakland Bay Bridge would soon exceed the practical capacity of that structure. For this reason, two concurrent engineering studies of the possibility of a new crossing were authorized in 1945 and in 1946. One study was undertaken by the State Department of Public Works in response to a request of the California Toll Bridge Authority, and the other was by a new Joint Army-Navy Board (1946) acting in accordance with instructions from the Congress as contained in H.R. 529, 79th Congress, 2nd Session.

The State Department of Public Works' report was released in January 1947. Eleven different crossing locations were studied, of which three can be described as southern crossings. One, a high-level bridge, crossed between Twentieth Street in San Francisco and the extension of Webster Street in Alameda. Another, a low-level bridge with a movable span for navigation, crossed between Candlestick Point and Bay Farm Island. The third, a combined causeway-tube, crossed between Army Street in San Francisco and the extension of Webster Street in Alameda.

The report of the Joint Army-Navy Board (1946) was also released in January 1947. The Board, after investigating 29 different crossing plans, gave attention to three crossings,

one of which was essentially the same causeway-tube southern crossing studied by the Department of Public Works.

The Army-Navy Board in its 1947 Report also studied a bridge between Candlestick Point and Bay Farm Island but concluded that there was insufficient traffic to warrant such a crossing.

The Division of San Francisco Bay Toll Crossings was organized within the State Department of Public Works in December 1947, and was assigned the task of studying in further detail the two particular crossings of San Francisco Bay which had been recommended in the two foregoing reports:

(a) A high-level bridge similar in design to and located parallel to, and northerly of, the existing San Francisco-Oakland Bay Bridge, as recommended by the State Department of Public Works.

(b) A causeway-tube structure between Army Street in San Francisco and the extension of Fifth Street in Alameda, as recommended in the report of the Joint Army-Navy Board (1946).

Immediate construction of the first of the two above crossings was recommended by the Division of San Francisco Bay Toll Crossings in its 1948 Report. The estimated cost of the six-lane southern crossing was $178,421,000.

In a report to the Assembly Fact-Finding Committee on Tideland Reclamation . . . and Relief of Congestion on Transbay Crossings, a board of consulting engineers suggested the possibility of increasing the vehicular traffic capacity of the existing Bay Bridge by certain structural modifications, thereby allegedly obviating the need for a parallel structure, and in conjunction therewith constructing a southern crossing on the

line referred to in (b) above. In response to this suggestion, this Division made a detailed study of the southern crossing and the associated proposed changes to the Bay Bridge. The results of this study were contained in a report dated October 1949. Based upon a four-lane roadway as recommended by the consultants to the Committee, the estimated cost of the structure was $154,211,000.

Because of the differences of opinion as to where the next crossing of San Francisco Bay should be built, together with a fundamental disagreement as to the purpose and objective to be served by any new Bay crossing, all work by this Division on the southern crossing and the parallel bridge was suspended on June 30, 1950. All plans and drawings, both complete and incomplete, were placed in storage where they remained in an inactive status until the spring of 1954.

During the 1951 Session of the State Legislature bills were introduced in an effort to settle the question of where the next crossing of San Francisco Bay should be located. All of these bills failed of passage. In the 1953 Session, however, a new attempt proved successful. Chapter 1056, Statutes of 1953, not only gave priority to the Southern Crossing, and stipulated the means of obtaining funds for the engineering studies, plans, and specifications, but it also specified in detail the location of the Crossing and its approaches. The designated termini were (1) the vicinity of Third and Army Streets in San Francisco, and (2) Bay Farm Island.

It should be noted that this particular location had not previously been considered in any official engineering report. All previous reports by the State and other governmental agencies had contemplated that any crossing from Army Street in San Francisco would have an easterly bridgehead on the south shore of the City of Alameda, approximately three miles northeast of the Bay Farm Island terminus.

Procedure Followed in Accordance with 1953 Statutes

The Southern Crossing Bill, officially referred to as Chapter 1056 of the Statutes of 1953, and which constituted an amendment to the California Toll Bridge Authority Act (Division 17, Streets and Highways Code), specifically directed the State Department of Public Works to apply for a Department of the Army permit for construction on the designated line. In accordance with the directive, an application was submitted by the Department on July 2, 1953, and a public hearing was held by the Corps of Engineers, San Francisco District, on August 17, 1953. At this hearing it developed for the first time that the U. S. Navy in connection with its Alameda Naval Air Station had definite plans for extending its seadrome runways to the south, and that the proposed crossing on a direct line between the points designated in the Statutes would interfere with the seadrome expansion. Consequently, the application of the Department of Public Works for a crossing on the direct line between Army Street and Bay Farm Island was denied by the Department of the Army on November 3, 1953.

The question then arose as to whether the Department of Public Works could or should, under the terms of Chapter 1056, broaden its studies to embrace other crossings with termini in San Francisco as far south as Candlestick Point. This question was referred by the Director of Public Works to the Attorney General of the State of California, who rendered a formal opinion (No. 53/259) on December 15, 1953 (22 Ops.Cal. Atty.Gen.213).

This opinion, in brief, required the Department of Public Works to submit a revised application to the Department of the Army for a line swinging several thousand feet south of the proposed tangent crossing, thereby avoiding the restricted seadrome area, but retaining the same termini as defined in the Statutes.

In accordance with this opinion, a revised application calling for a crossing on a line deviated several thousand feet to the south was submitted for the consideration of the Department of the Army on December 31, 1953, and a permit was granted on April 8, 1954. The instrument of approval is reproduced in Appendix B.

The Statutes also specified that the possibility of financing the Southern Crossing through the Reconstruction Finance Corporation should be explored. The Director of Public Works addressed a letter to the RFC covering this matter, and received a reply stating that they would be unable to finance the proposed project.

A directive was issued on April 1, 1954, by the Director of Public Works to the Division of San Francisco Bay Toll

Crossings to initiate the engineering studies for the Southern Crossing. A separate section was organized at once within this Division, and its efforts have subsequently been devoted exclusively to the Southern Crossing studies.

Drawings showing general alignment of the Crossing and the approaches were then made, and structural design of the main crossing and approaches was resumed where it was discontinued in 1949.

A drawing and a detailed description of the Southern Crossing and approaches thereto were submitted by the Department of Public Works to the Attorney General of the State of California for his review. In answer, a communication dated August 20, 1954, stated in part that:

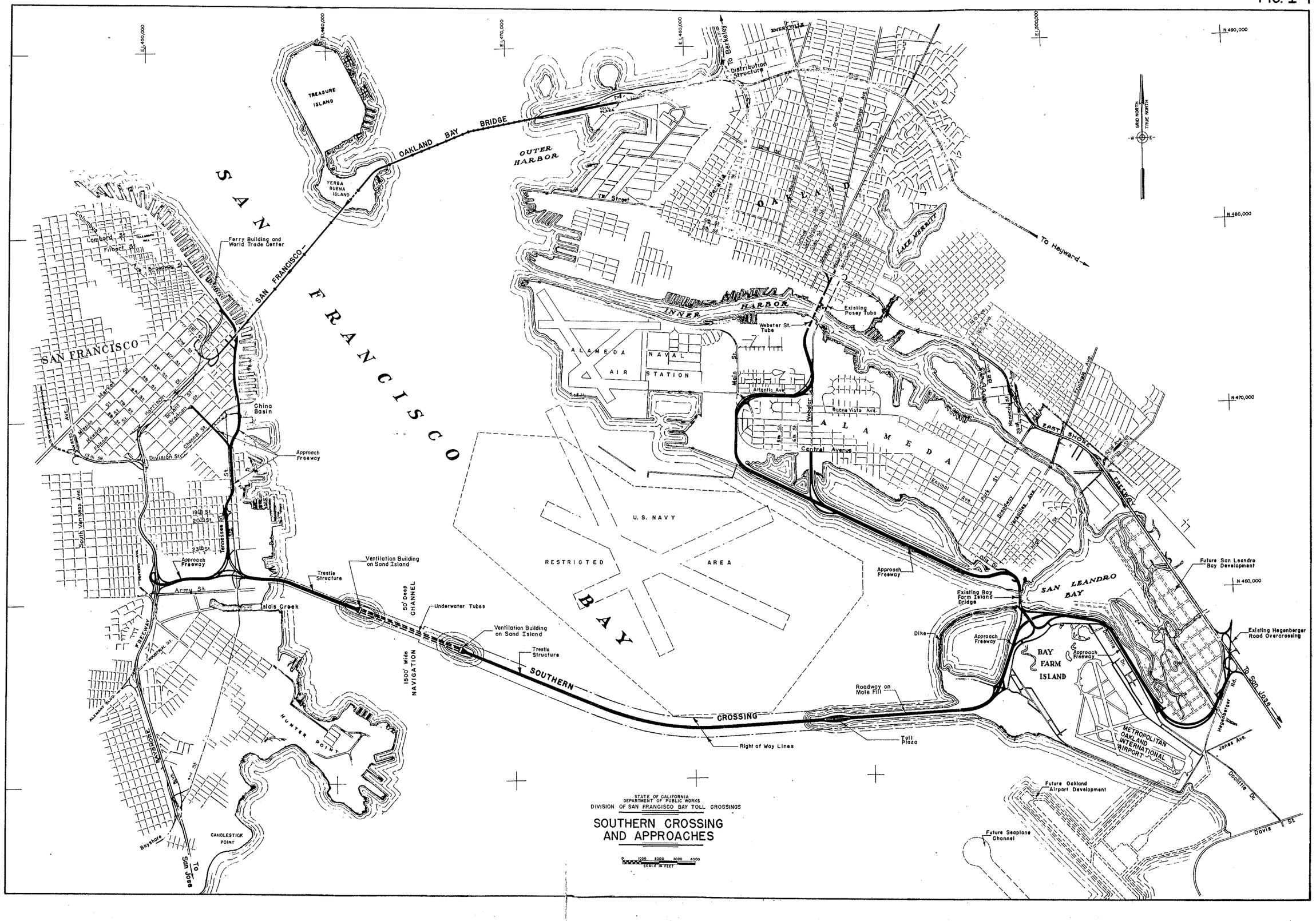
> "We believe each of the approaches listed therein conforms in all respects with the requirements of the Legislature as expressed. . ." (in Chapter 1056, Statutes 1953).

A drawing showing the general plan and elevation of the transbay section of the Southern Crossing was submitted to the Corps of Engineers, San Francisco District, for review on July 29, 1954. By letter dated October 20, 1954, the District Engineer advised this Division that the plan was in compliance with the previously issued Department of the Army permit, and that all minimum requirements of the U. S. Navy had been met.

In the fall of 1954 applications were also submitted to the U. S. Corps of Engineers for three crossings on the approaches where there was some question whether the rights of navigation might be involved. However, the U. S. Engineers stated in reply that they did not believe they had any jurisdiction over any of these three crossings, since they are shoreward of the established harbor lines.

Under date of December 1, 1954, this Division submitted to the Director of Public Works a report on the progress of the studies that had been made up to that time.

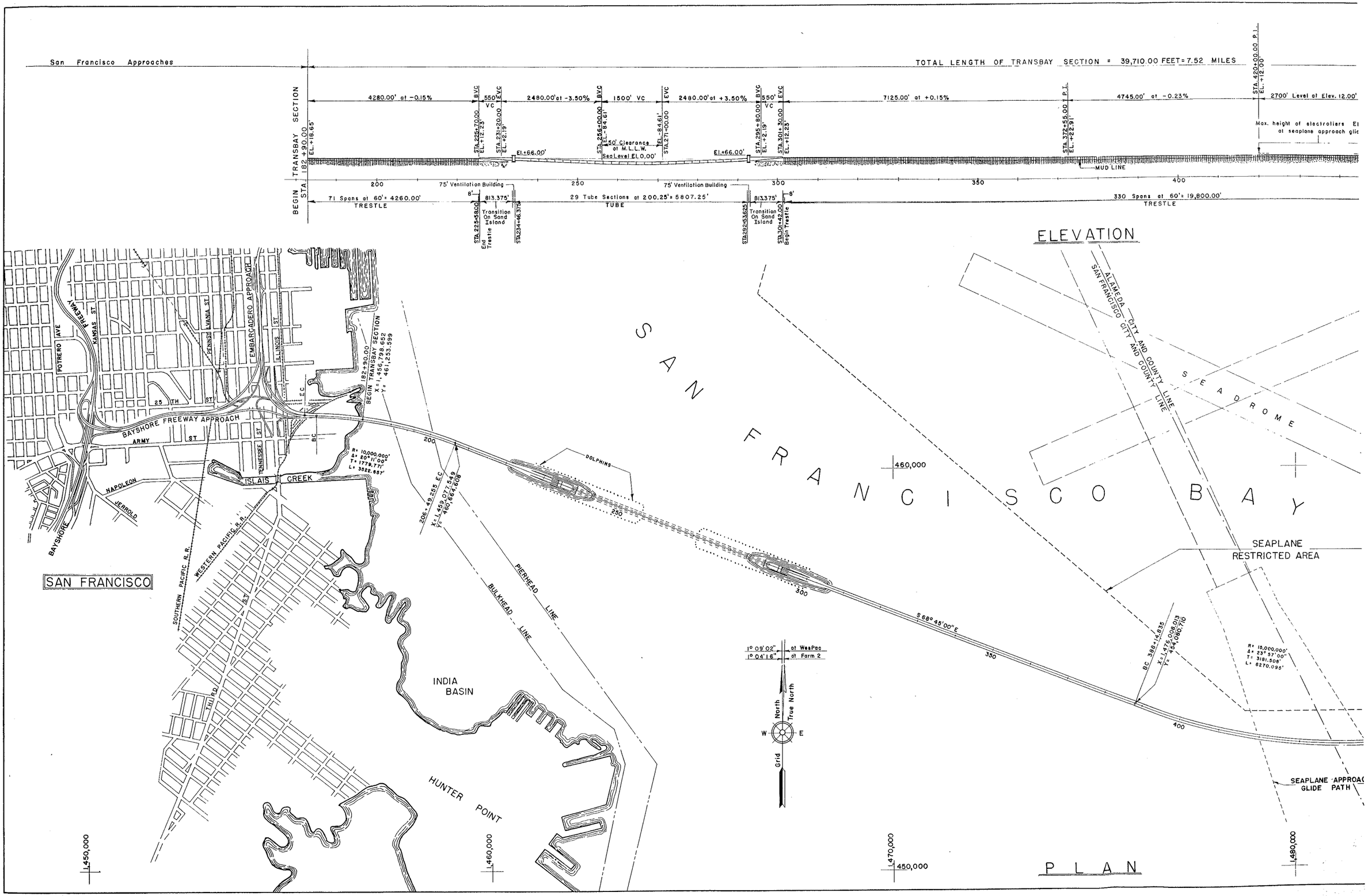
During 1955, engineering and financial studies were continued. Preliminary plans have been completed, cost estimates have been made, and traffic and revenue forecasts have been obtained. Results of this work are reported herein.



STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING AND APPROACHES

SCALE IN FEET
0 1000 2000 3000 4000


San Francisco Approaches
TOTAL LENGTH OF TRANSBAY SECTION = 39,710.00 FEET = 7.52 MILES
BEGIN TRANSBAY SECTION STA 182+90.00 EL.+18.65'
4280.00' at -0.15%
550' VC
2480.00' at -3.50%
1500' VC
2480.00' at +3.50%
550' VC
7125.00' at +0.15%
4745.00' at -0.23%
2700' Level at Elev. 12.00'
STA 420+00.00 P.I. EL.+12.00'
Max. height of electroliers El
at seaplane approach glid
STA 225+70.00 EL.+12.23'
STA 231+20.00 EL.+2.19'
STA 255+00.00 EL.+94.61'
STA 271+00.00 EL.-84.61'
STA 295+80.00 EL.+2.19'
STA 301+30.00 EL.+12.23'
STA 372+55.00 P.I. EL.+22.91'
El.+66.00'
Sea Level El. 0.00'
50' Clearance at M.L.L.W.
MUD LINE
75' Ventilation Building
75' Ventilation Building
71 Spans at 60'= 4260.00'
TRESTLE
29 Tube Sections at 200.25'= 5807.25'
TUBE
330 Spans at 60'= 19,800.00'
TRESTLE
Transition On Sand Island
Transition On Sand Island
STA 225+58.00 End Trestle
STA 234+46.375
STA 292+53.625
STA 301+42.00 Begin Trestle
ELEVATION
EMBARCADERO APPROACH
FREEWAY
POTRERO AVE
KANSAS ST
PENNSYLVANIA ST
ILLINOIS ST
25TH ST
182+90.00 BEGIN TRANSBAY SECTION
X = 1,456,798.652
Y = 461,253.599
BAYSHORE FREEWAY APPROACH
ARMY ST
TENNESSEE ST
R= 10,000.000'
Δ= 20° 11' 00"
T= 1778.71'
L= 3382.887'
NAPOLEON
JERROLD
BAYSHORE
ISLAIS CREEK
SOUTHERN PACIFIC R.R.
WESTERN PACIFIC R.R.
THIRD ST
SAN FRANCISCO
INDIA BASIN
HUNTER POINT
PIERHEAD LINE
BULKHEAD LINE
DOLPHINS
206+49.255 E.C.
X = 1,459,077.549
Y = 460,664.608
SAN FRANCISCO BAY
460,000
S 68° 45' 00" E
ALAMEDA
SAN FRANCISCO CITY AND COUNTY LINE
SEADROME
SEAPLANE RESTRICTED AREA
BC 398+15.835
X = 1,475,038.013
Y = 454,080.710
R= 15,000.000'
Δ= 23° 57' 00"
T= 3181.508'
L= 6270.095'
1° 09' 02" at WesPac
1° 04' 16" at Farm 2
North
True North
Grid
W
E
SEAPLANE APPROAC
GLIDE PATH
450,000
460,000
470,000
480,000
PLAN

TOTAL LENGTH OF TRANSBAY SECTION = 39,710.00 FEET = 7.52 MILES

5.00' at +0.15% | P.I. STA. 372+55.00 EL. +22.91' | 4745.00' at −0.23% | STA. 420+00.00 P.I. EL. +12.00' | 2700' Level at Elev. 12.00' | STA. 447+00.00 EL. +12.00' | 2700.00' at +0.15% | STA. 474+00.00 EL. +16.05' | 2700.00' at −0.15% | P.I. STA. 501+00.00 El. +12.00' | 800' at +0.25% | P.I. STA. 509+00.00 STA. 511+00.00 | 800' at −0.25% | P.I. STA. 519+00.00 El. +12.00' | 3050.00' at +0.15% | P.I. STA. 549+50.00 EL. +16.58' | 3050.00' at −0.15% | Eastbay Approaches

200' Level at El. + 14.00'

Max. height of electrotiers El. +36.60' at seaplane approach glide path

MUD LINE

350 400 450 500 550

330 Spans at 60' = 19,800.00' TRESTLE

8' | STA. 493+58.00 End of Trestle | 8,042.00' MOLE | STA. 580+00.00 ELEV. +12.00' END TRANSBAY SECTION

ELEVATION

PLAN

ALAMEDA — CITY AND COUNTY LINE
SAN FRANCISCO — CITY AND COUNTY LINE

SEADROME

SEAPLANE RESTRICTED AREA

S 68° 45' 00" E

BC 388+14.835
X = 1,476,008.013
Y = 454,080.710

R = 15,000.000'
Δ = 23° 57' 00"
T = 3181.508'
L = 6270.095'

EC 450+84.930
X = 1,482,151.181
Y = 453,077.460

N 87° 18' 00" E

SEAPLANE APPROACH GLIDE PATH

510+00.00 Center Line of Toll Plaza

APPROACH GLIDE PATH TO PROPOSED NEW RUNWAY AT OAKLAND AIRPORT

U.S.C.&G.S. Form 2
X = 1,494,085.31
Y = 454,452.01

580+00.00 END TRANSBAY SECTION
X = 1,495,051.96
Y = 453,685.86

BC

ALAMEDA APPROACH

PIERHEAD — BULKHEAD LINE

ALAMEDA

CLINTON AVE | ENCINAL AVE | PARK ST | SAN JOSE AVE | VERSAILLES AVE | HIGH ST | OTIS DR.

OAKLAND TIDAL CANAL

EAST

SAN LEANDRO BAY

EAST SHORE FREEWAY APPROACH

DOOLITTLE

AIRPORT DRIVE

CHANNEL

ALAMEDA MUNICIPAL GOLF COURSE

MAITLAND DR.

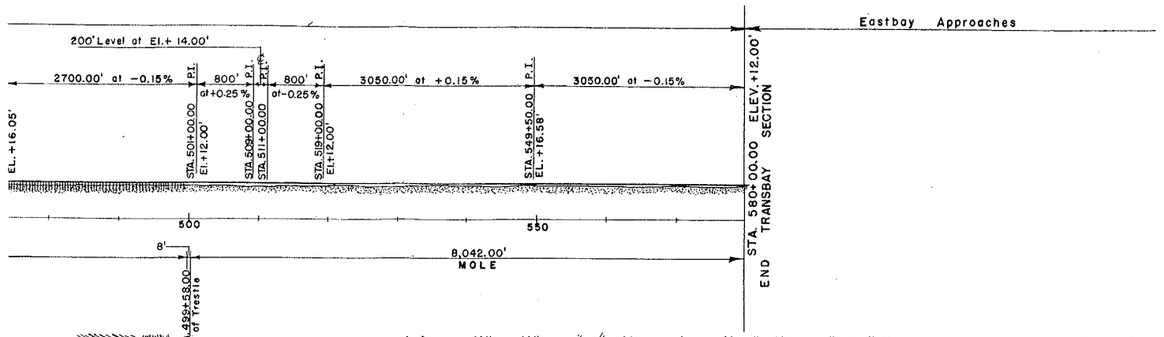
CITY OF ALAMEDA
CITY OF OAKLAND

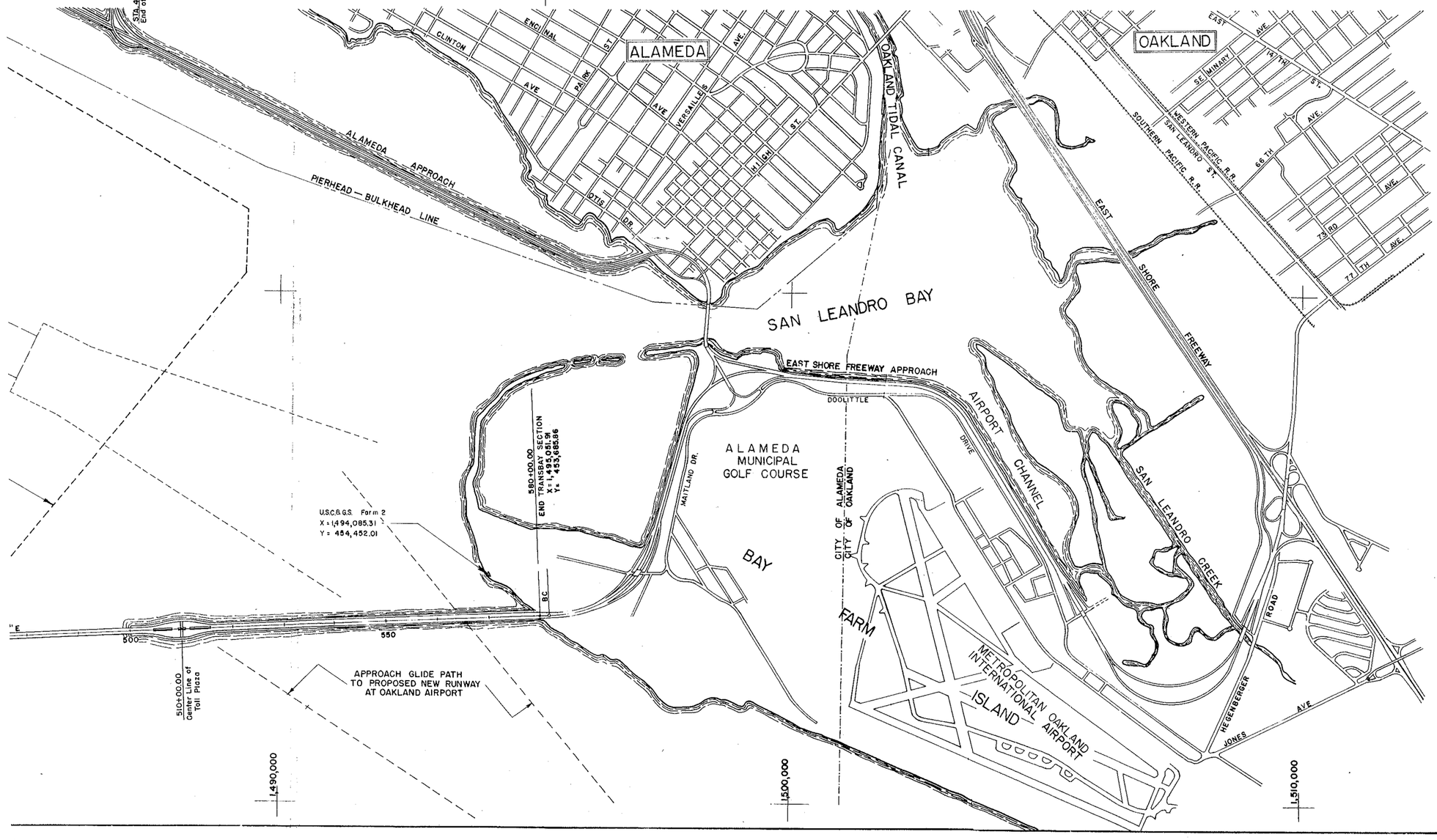
BAY FARM ISLAND

METROPOLITAN OAKLAND INTERNATIONAL AIRPORT

460,000 | 1480,000 | 1490,000 | 1500,000 | 150,000

FIG IV-1





Notes:

M.H.H.W. = El.+ 2.90 at Potrero Point.
S.L. = El. 0.00 = U.S.C.& G.S. Sea Level Datum of 1929.
M.L.L.W. = El.-3.40 at Potrero Point.

Coordinates, bearings and distances are on the California Coordinate System Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.

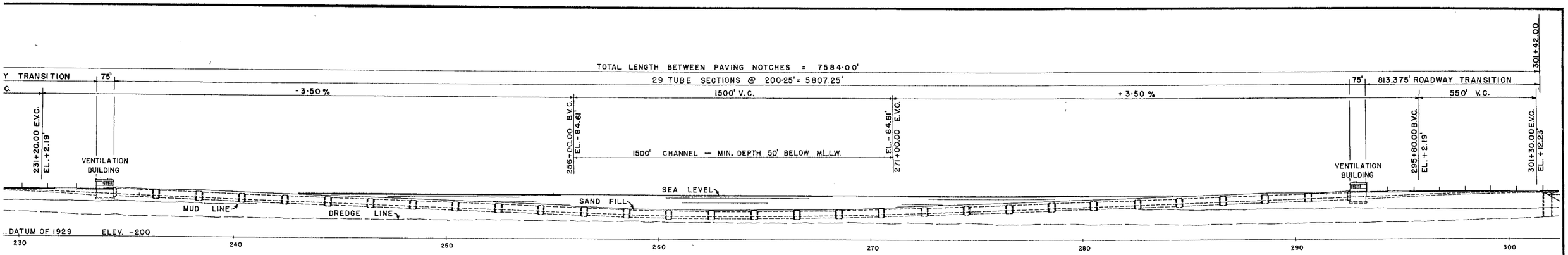
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

TRANSBAY SECTION

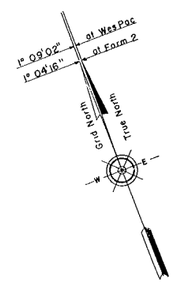
GENERAL PLAN AND ELEVATION

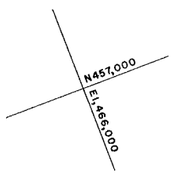
0 1000 3000
SCALE IN FEET

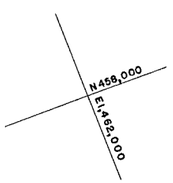


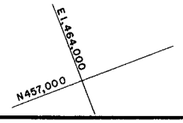
ELEVATION

PLAN









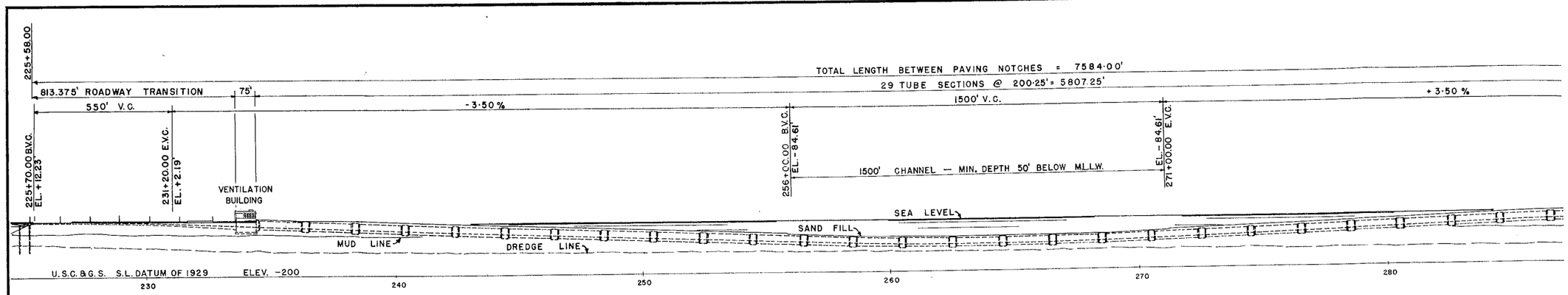
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

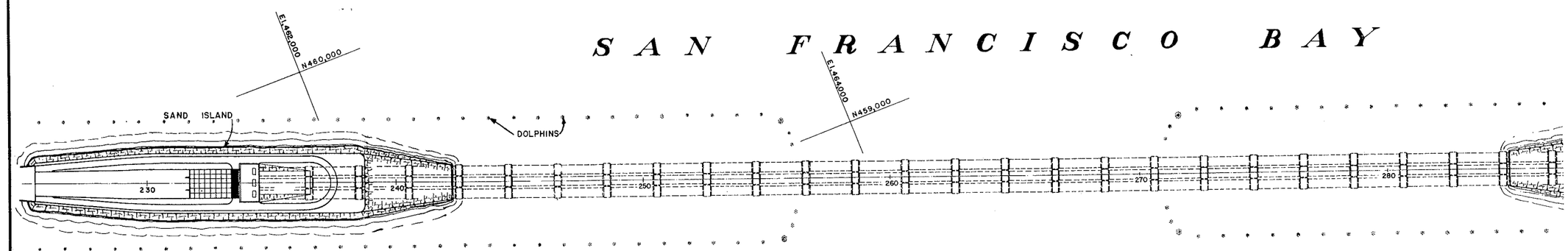
BAY TUBE

GENERAL PLAN AND ELEVATION

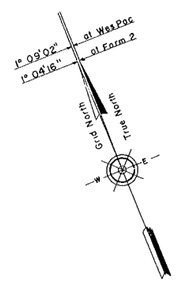
0 100 200 400 800
SCALE IN FEET

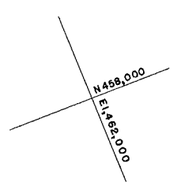


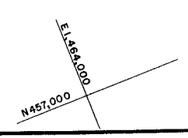
ELEVATION



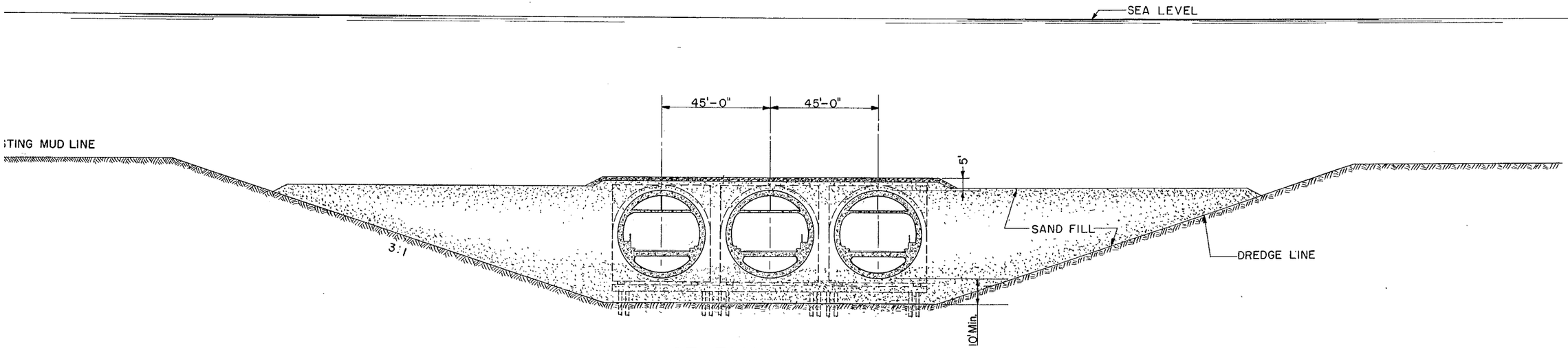
PLAN



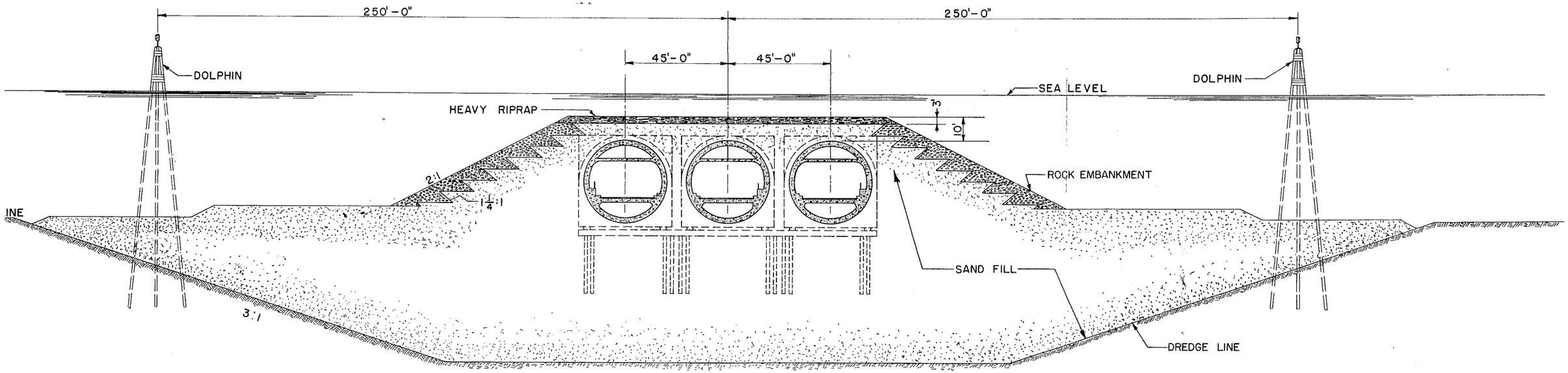




GE



STATION 263+50



STATION 245+00

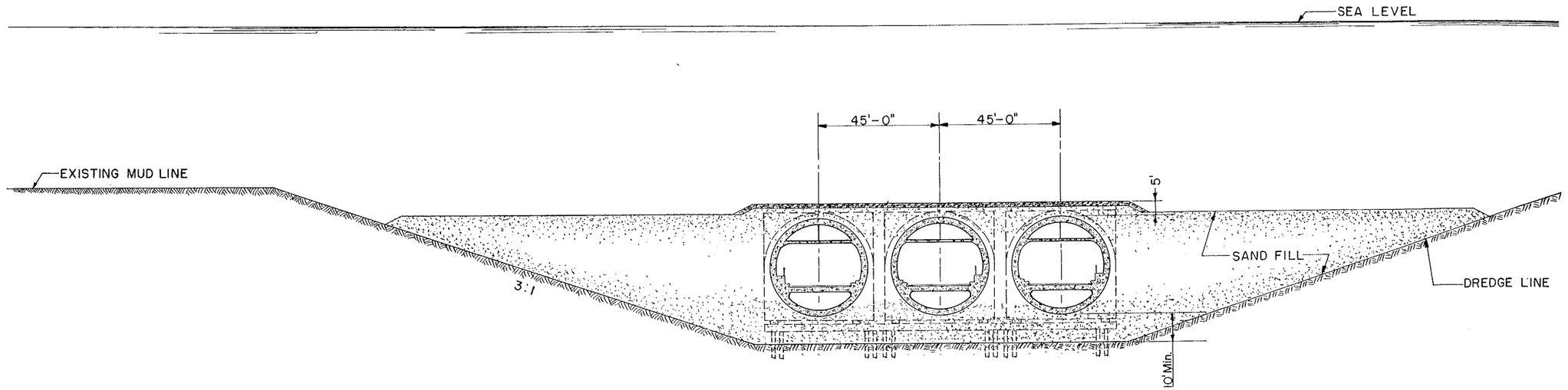
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

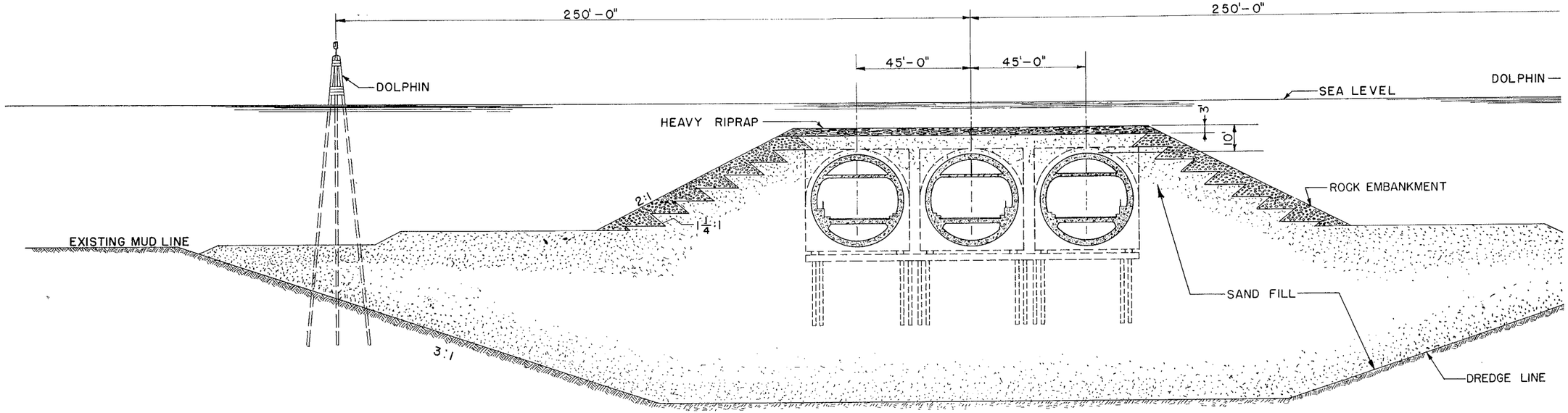
BAY TUBE

TYPICAL SECTIONS

0 20 40 60
SCALE IN FEET



STATION 263+50



STATION 245+00

P A R T V

S A N F R A N C I S C O A P P R O A C H E S

The San Francisco Approaches to the Southern Crossing extend northerly and westerly from the interchange adjacent to the bridgehead. This approach system is divided into two main sections: (1) the Embarcadero Approach, and (2) the Bayshore Freeway Approach, which are shown on Figures V-1, V-2, and V-9.

The Embarcadero Approach, see Figure V-2, extends from the bridgehead northerly to the downtown business and waterfront districts. It consists of the following components:

(a) The Third and Army Interchange.

(b) A six-lane freeway along Tennessee and Third Streets to the intersection of Third and Fourth Streets.

(c) A four-lane extension northerly along the waterfront to a connection at Howard Street with the Embarcadero Freeway.

(d) The four-lane Fourth Street Connection extending westerly along Fourth Street to the intersection of Fourth and Brannan Streets.

The Bayshore Freeway Approach, see Figure V-9, extends from the Third and Army Interchange westerly to the Bayshore Freeway in the vicinity of 26th Street. It consists of the following components:

(a) The four-lane Army Freeway.

(b) The Bayshore-Army Freeway Interchange.

EMBARCADERO APPROACH

Third and Army Interchange

The Third and Army Interchange will collect and distribute traffic to and from the Southern Crossing and the Army, Embarcadero, and Southern Freeways. (The Southern Freeway, sometimes called the "Alemany Freeway", is currently being planned by the City of San Francisco and the State Division of Highways.) The Interchange will provide connections to city streets at Army Street and 23rd Street. (See Figure V-3.)

The Third and Army Interchange will be located in the area immediately north of Army Street, extending on both sides of Third Street from the bridgehead to Indiana Street, and will be elevated to clear city streets and railroad tracks.

Mention has been made of the "Southern Freeway" planned by the City of San Francisco. The eastern section of this freeway will form a connection between Bayshore Freeway at Alemany Boulevard and the Southern Crossing Third and Army Interchange. Planning of the Southern Crossing recognizes the probability of construction of this facility, and provisions have been made for its connection at the Third and Army Interchange. Traffic traveling between the peninsular area and the San Francisco waterfront areas or the Southern Crossing will probably choose this freeway in preference to the Army Freeway. (See Figure V-1.)

Main Trunk of Embarcadero Approach Along Tennessee Street and Third Street

This portion of the Embarcadero Approach will be a freeway connection extending northerly from the Third and Army Interchange. The major portion of this freeway will be on an elevated structure. (See Figure V-2.)

Beginning at the Third and Army Interchange the freeway will follow the east side of Tennessee Street northward to 18th Street; thence the alignment will curve eastward, crossing at Mariposa to the east side of Third Street. Connections will be provided to the city streets at 23rd, 19th, and Mariposa Streets. (See Figure V-4.) The freeway will continue northerly paralleling Third Street to its intersection with Fourth Street, where it branches, see Figure V-5, to form the Fourth Street Connection, and a freeway extension which swings easterly to cross over China Basin, thence along The Embarcadero to a connection with the portion of the Embarcadero Freeway which extends northerly from Howard Street and which will be constructed by the Division of Highways.

Extension of Embarcadero Approach Along the Waterfront

The branch of the Embarcadero Approach which swings eastward to the waterfront is an elevated double-decked structure, with two lanes on each of the one-way decks. Figures V-5, V-6, and V-7 show this approach and the connections to various streets as required in the Statutes.

On the south side of China Basin the freeway will be a

steel girder viaduct built above the present Santa Fe railway yard, which is on land controlled by the Board of State Harbor Commissioners.

The Statutes specify a crossing of China Basin providing a vertical clearance of 135 feet above M.H.H.W. A steel truss cantilever bridge, with a center span of 600 feet and two side spans of 300 feet, is planned for this crossing.

Application was made on September 1, 1954, to the U. S. Department of the Army, Corps of Engineers, for approval of location and plans for the crossing of China Basin with the specified 135-foot clearance. Permission was also requested to build a bridge, with a vertical clearance of 35 feet over the inland extension of China Basin (Channel Street) at Fourth Street. In a letter dated December 13, 1954, the Department of the Army returned both applications without action, since the Department was of the opinion it had no jurisdiction over this waterway. The letter states, in part, as follows:

> "...it has been determined that in the administration of the laws enacted by Congress for the protection and preservation of the navigable waters of the United States this Department does not exercise jurisdiction over the portion of the China Basin-Channel Street waterway that is located shoreward of the established harbor lines at this locality..."

Northward from the China Basin crossing the freeway will be a girder viaduct built directly over The Embarcadero. The street level below this structure will be accessible to truck and other local traffic and for railroad switching operations to and from the various piers and waterfront industries.

Connections to city streets will be made at the following points:

Intersection	Type of Connection
Main and Harrison	Northbound off-ramp
Spear and Harrison	Southbound on-ramp
Howard and The Embarcadero	Southbound on-ramp
Mission and The Embarcadero	Northbound off-ramp

All of the foregoing ramps will have maximum grades of 6 percent.

At the north end, in the vicinity of Howard Street, the structure will connect with the Embarcadero Freeway viaduct to be constructed by the State Division of Highways. However, because of heavy vehicular traffic and the presence of numerous railroad tracks, any ramps will seriously obstruct The Embarcadero in this area.

Fourth Street Connection

Since none of the previous studies made by this Division had envisioned a connection to the intersection of Fourth and Brannan Streets, as required by the Statutes, a study was necessitated to determine how this problem could best be solved. Three alternatives were investigated, as follows:

1. Swinging the main trunk of the Embarcadero Freeway somewhat to the west to allow a crossing of Channel Street in the vicinity of Fourth Street, with a short ramp down to the Fourth and Brannan intersection. This alternative was ruled out by the legislative requirement for a high-level bridge over China Basin.

2. Making a connection to Fourth and Brannan from the Embarcadero Freeway on the north

Side of China Basin. The relatively expensive real estate developments in this area, as well as the height of the Embarcadero Approach viaduct at the point where a connection would be necessary, ruled out this alternative.

3. Making a connection from the Embarcadero Approach on the south side of China Basin, thereby necessitating a crossing over Channel Street. This alternative was selected.

The Fourth Street Connection as planned requires the construction of an entirely separate elevated structure about 3,500 feet long, as shown in Figure V-8. This connection requires crossings over Channel Street and over railroad yards of the Southern Pacific Company's Third and Townsend passenger depot.

A fixed span with a vertical clearance of 35 feet above M.H.H.W. is planned across Channel Street. This clearance is sufficient only for barges and small harbor vessels. A high-level bridge was considered undesirable at this location due to the excessively steep grades which would be required to bring the roadway down to Brannan Street; a low-level bridge with a movable span would result in the backing-up of traffic, not only on the connection itself but also on the Embarcadero Approach.

The existing single leaf bascule bridge on the surface level of Fourth Street alongside the viaduct will remain in place for use of local traffic.

It is understood that the City of San Francisco plans to designate Brannan Street as one-way westbound, and Fourth Street as one-way southbound. Accordingly, the connection

to the Fourth and Brannan intersection is arranged for this type of traffic movement.

The Fourth and Brannan area is, in general, a warehouse and light manufacturing area and will generate a considerable amount of truck traffic. With some railroad relocation work, ramp grades less than 6 percent can be provided.

BAYSHORE FREEWAY APPROACH

Army Freeway

The Army Freeway will be an east-west link, about one mile long, between the Third and Army Interchange and the Bayshore Freeway, with the connection to the latter immediately north of the existing Bayshore-Army Street Interchange. There will be no intermediate points of ingress or egress.

The topography along the line of this proposed freeway is rather precipitous, and will necessitate deep cuts and high fills or viaducts. Connecticut and Iowa Streets will cross beneath the freeway; all other north-south streets between Third Street and Bayshore Freeway will be closed.

This freeway will cross over the south portal of a railroad tunnel on the main line of the Southern Pacific into San Francisco. However, the freeway construction will not cause any interference with railroad operation.

Bayshore-Army Freeway Interchange

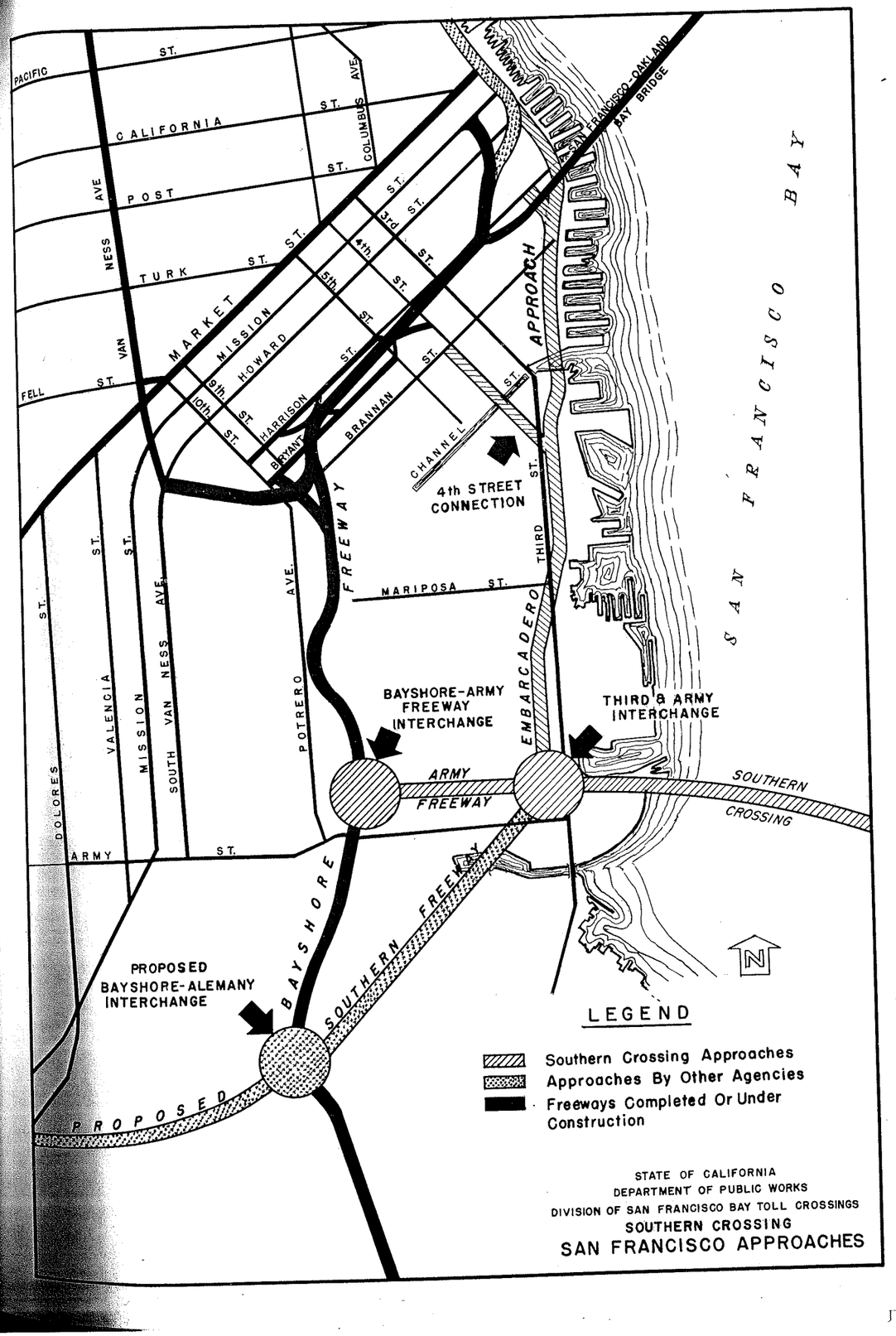
The interchange between the Bayshore and Army Freeways will be located in the general vicinity of 26th Street, and will extend from the existing 23rd Street bridge over the

Bayshore Freeway to the existing viaduct over the Army Street-Potrero rotary. In accordance with the requirements of the Statutes, ramps must be provided in both directions to permit Southern Crossing traffic to turn either north or south on the Bayshore Freeway. Connections to city streets must also be provided.

The planned Southern Freeway will offer a more direct route between the Bayshore-Alemany Interchange and the Third and Army Interchange, thereby eliminating practically all traffic traveling between the Army Freeway and the south leg of the Bayshore Freeway. Traffic remaining on this interchange would consist primarily of automobiles moving between the Army Freeway and the north leg of the Bayshore Freeway.

The interchange provides all connections specified by the Statutes, with the important movements to and from the north being direct, and the less important movements to and from the south somewhat indirect. Northbound vehicles on the Bayshore desiring to use the Army Freeway will pass through the existing ground-level rotary intersection of Army and Potrero Streets.

FIG. V-1



STEEL GIRDER SPANS

THIRD & ARMY INTERCHANGE

−0.28% | 200'V.C. | −0.44% | 400'V.C. | −2.5% | +2.5% | 800'V.C. | 700'V.C. | −0.80% | 600'V.C. | −2.00% | 300'V.C. | +0.79%

STA. 155+00 EVC EL.+44.6'
STA. 163+00 BVC EL.+43.5'
STA. 169+00 EVC EL.+42.2'
STA. 153+00 BVC EL.+42.1'
STA. 149+00 EVC EL.+46.2'
"C" LINE STA. 149+00
"H" LINE STA. 04+97
STA. 5+95 BVC EL.+74.0'
STA. 13+95 PRC EL.+71.72'
STA. 20+95 EVC EL.+63.76'
STA. 26+45 BVC EL.+61.40'
STA. 31+50 EVC EL.+63.80'
STA. 34+50 BVC EL.+57.80'
STA. 37+50 EVC EL.+55.96'

U.S.C. & G.S. S.L. OF 1929 = 0.000'

SEA LEVEL DATUM-1929. EL.-200.00'

170 165 160 155 150 5 10 15 20 25 30 35 40

BAYSHORE FREEWAY APPROACH

SOUTHERN PACIFIC RR

PENNSYLVANIA STREET

IOWA STREET

W.P. RR. AT & S.F. RR.

THIRD & ARMY INTERCHANGE

INDIANA STREET

MINNESOTA STREET

TENNESSEE STREET

"H" LINE

"C" LINE

MAINTENANCE BUILDING

THIRD STREET

ILLINOIS STREET

MICHIGAN

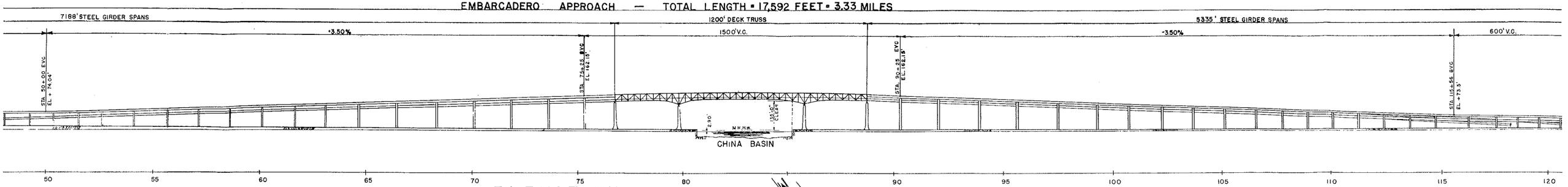
WESTERN PACIFIC RR. YARD

STREET | ARMY | FOURTH ST. | TWENTY THIRD STREET | SECOND STREET | TWENTY STREET | VIADUCT | PED. RAMP | EIGHTEENTH STREET | MARIPOSA STREET | TWENTIETH STREET | SIXTEENTH STREET

S.P.

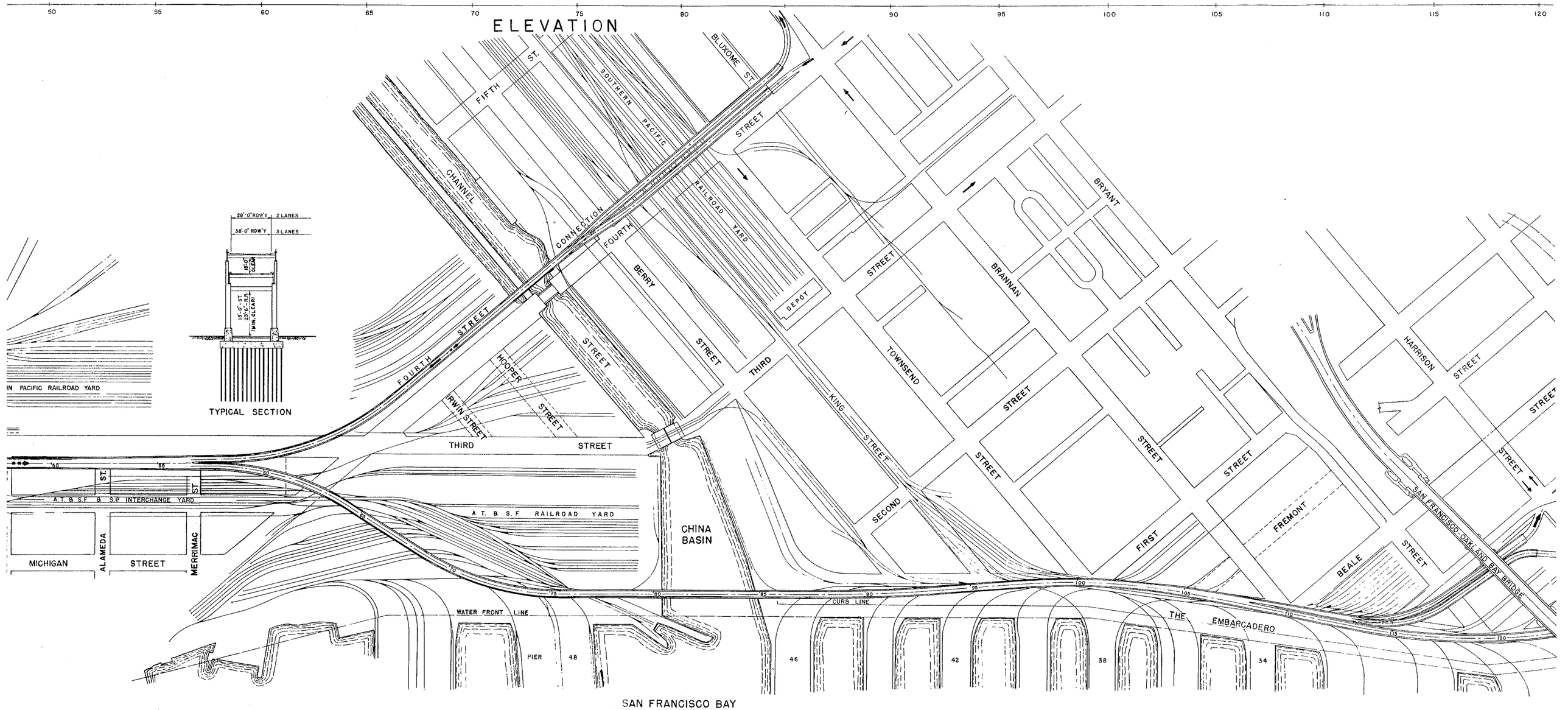
17th

EMBARCADERO APPROACH — TOTAL LENGTH = 17,592 FEET = 3.33 MILES



ELEVATION

TYPICAL SECTION



SAN FRANCISCO BAY

MILES

5335' STEEL GIRDER SPANS

-3.50%

STA. 90+25 EVC EL. 162.18'

600' V.C.

STA. 114+56 BVG EL. +73.5'

+0.12%

STA. 121+56 EVC EL. +82.5'

200' V.C.

STA. 125+03 BVG EL. 64.0'

-0.12%

STA. 127+03 EVC EL. 64.0'

200' V.C.

STA. 131+79 BVG EL. 63.6'

STA. 133+79 EVC EL. 64.0'

+0.6%

STA. 142+10 EL. 69.0

STA. 145+89 END OF PROJECT

℄ OF MISSION ST.

90 95 100 105 110 115 120 125 130 135 140 145

BRYANT STREET

BRANNAN STREET

TOWNSEND STREET

FIRST STREET

SECOND STREET

FREMONT

BEALE STREET

HARRISON STREET

FOLSOM STREET

MAIN STREET

SPEAR STREET

HOWARD STREET

MISSION STREET

MARKET STREET

STEUART STREET

SAN FRANCISCO-OAKLAND BAY BRIDGE

EMBARCADERO FREEWAY BY CALIFORNIA DIVISION OF HIGHWAYS

WATER FRONT LINE

PIER 14

CURB LINE

THE EMBARCADERO

42 38 34 20

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EMBARCADERO APPROACH

GENERAL PLAN AND ELEVATION

0 100 200 400 600
SCALE IN FEET

SAN FRANCISCO BAY

TWENTY THIRD STREET
TWENTY FOURTH STREET
TWENTY FIFTH STREET
TENNESSEE STREET
MINNESOTA STREET
INDIANA STREET
MISSISSIPPI STREET
ILLINOIS STREET
THIRD STREET
ARMY STREET
PENNSYLVANIA
IOWA
H - STATION 04+87.00
C - STATION 148+00.00
STATION 142+30.00
STATION 183+80.00
A LINE
B LINE
C LINE
D LINE
E LINE
F LINE
H LINE
A.T.& S.F.R.R.
W.P.R.R.
SOUTHERN PACIFIC RAILROAD
S.P.R.R.-A.T.& S.F.R.R. JOINT TRACKS
WESTERN PACIFIC RAILROAD YARD
SEARSVILLE YARD
EMBARCADERO APPROACH
TRANSBAY SECTION
BAYSHORE FREEWAY APPROACH
BAYSHORE FREEWAY
TO SOUTHERN CROSSING
R=1400'
R=1500'
R=1600'
R=1150'
R=1180'
R=250'
R=750'
R=1200'
R=1060'
R=300'
R=1700'
R=1900'
R=10,000'
N
W
E
S

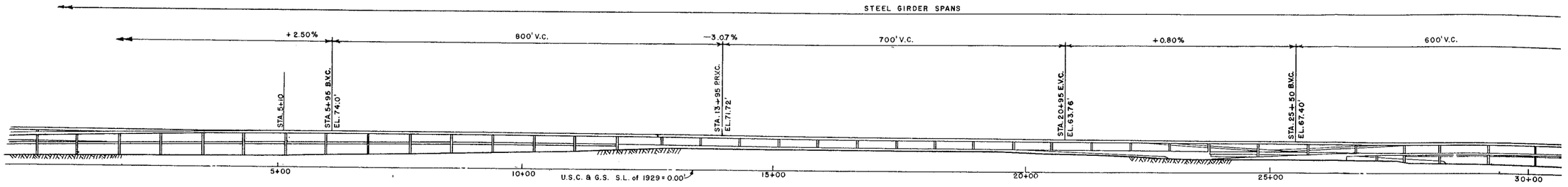
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

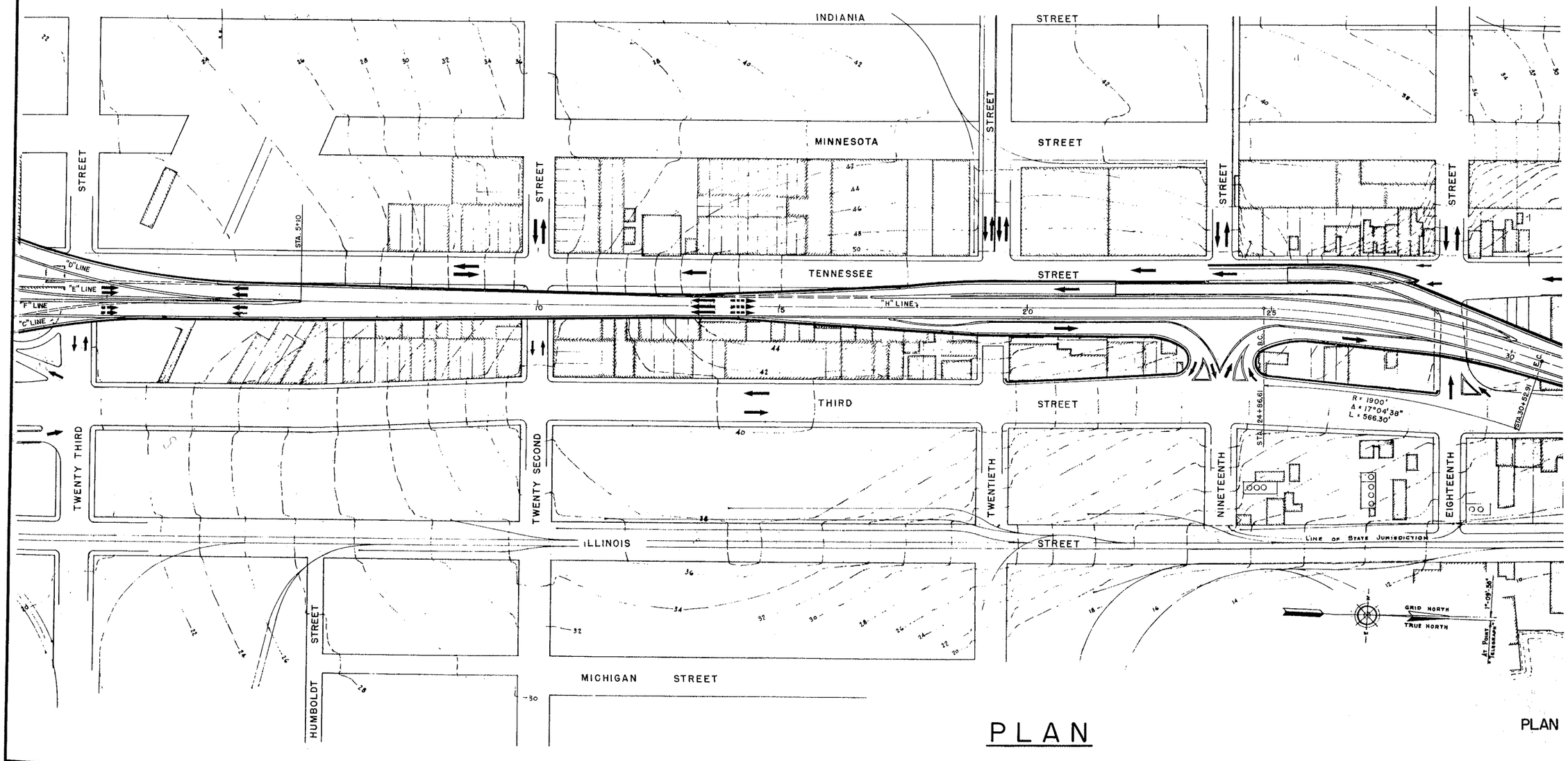
EMBARCADERO APPROACH
THIRD AND ARMY INTERCHANGE

0 100 200 300
SCALE IN FEET

TWENTY THIRD STREET
MINNESOTA STREET
TENNESSEE STREET
INDIANA STREET
MISSISSIPPI STREET
STREET
STREET
STREET
STREET
STREET
STREET
STREET
TWENTY FOURTH STREET
TWENTY FIFTH STREET
TWENTY FIFTH STREET
ILLINOIS
THIRD
IOWA
PENNSYLVANIA
ARMY
STREET
M - STATION 04+87.00
C - STATION 148+00.00
M LINE
A LINE
B LINE
C LINE
D LINE
E LINE
F LINE
A.T.& S.F.R.R.
W.P.R.R.
WESTERN PACIFIC RAILROAD YARD
SOUTHERN PACIFIC RAILROAD
STATION 143+30.00
BAYSHORE FREEWAY APPROACH
EMBARCADERO APPROACH
TO BAYSHORE FREEWAY
S.P.R.R.-A.T.& S.F. JOINT TRACKS
ROUNDHOUSE
SERVICE YARD
R=1400'
R=1500'
R=1600'
R=1700'
R=1900'
R=1150'
R=1180'
R=1200'
R=1050'
R=250'
R=750'
R=300'
R=200'
R=10,000'
DIVISIO
EMBA
THIRD



ELEVATION



PLAN

PLAN

STEEL GIRDER SPANS

+2.50% | 800' V.C. | −3.07% | 700' V.C. | +0.80% | 600' V.C. | −2.00% | 300' V.C. | +0.79%

STA. 5+10 | STA. 5+95 B.V.C. EL. 74.0' | STA. 13+95 P.R.V.C. EL. 71.72' | STA. 20+95 E.V.C. EL. 63.76' | STA. 25+50 B.V.C. EL. 67.40' | STA. 31+50 E.V.C. EL. 83.80' | STA. 34+50 E.V.C. EL. 57.80' | STA. 37+50 E.V.C. EL. 55.96'

5+00 | 10+00 | 15+00 | 20+00 | 25+00 | 30+00 | 35+00

U.S.C. & G.S. S.L. of 1929 = 0.00'

ELEVATION

INDIANA STREET

MINNESOTA STREET

TENNESSEE STREET

"H" LINE

THIRD STREET

TWENTY SECOND STREET | TWENTIETH STREET | NINETEENTH STREET | EIGHTEENTH STREET | MARIPOSA STREET

ILLINOIS STREET

HUMBOLDT STREET

MICHIGAN STREET

STA. 5+10

STA. 24+86.61 B.C.

R = 1900'
Δ = 17°04'38"
L = 566.30'

STA. 30+52.91 E.C.

STA. 34+52.91 B.C.

R = 1900'
Δ = 17°04'38"
L = 566.30'

LINE OF STATE JURISDICTION

GRID NORTH
TRUE NORTH
1°-09'-58" AT POINT ELSEWHERE

PLAN

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EMBARCADERO APPROACH

PLAN AND ELEVATION STA. 5+10 TO STA. 35+00

0 100 200 300
SCALE IN FEET

Steel Girder Spans

+0.79%

600' V.C.

+3.5%

STA. 44+00 B.V.C.
EL. 61.16

STA. 50+00 E.V.C.
EL. 74.04'

35 40 U.S.C. & G.S. S.L. of 1929 = 0.00' 45 50 55 60 65

ELEVATION

SOUTHERN PACIFIC R.R. YARD

STA. 66+83.31 E.C.

R=1200'
Δ=39°22'57"
L=824.83'

R=1900'
Δ=17°04'38"
L=566.30'

STA. 40+19.21 E.C.

STA. 59+56.48 B.C.

TO FOURTH & P

LINE OF S

THIRD STREET

"K" LINE

"H" LINE

"J" LINE

35 40 45 50 55 60

A.T.&S.F. AND S.P. INTERCHANGE YARD

STA. 56+40.00 B.C.

SEVENTEENTH STREET

LINE OF STATE JURISDICTION

R=1200'
Δ=30°40'43"
L=642.55'

STA. 64+98.55 E.C.

ILLINOIS STREET

ALAMEDA STREET

FOURTH STREET

SIXTEENTH STREET

ELDORADO STREET

MICHIGAN STREET

PROPOSED SANTA FE R.R. YARD

SAN FRANCISCO BAY

Pier 52

Water Front Line

GRID NORTH

TRUE NORTH

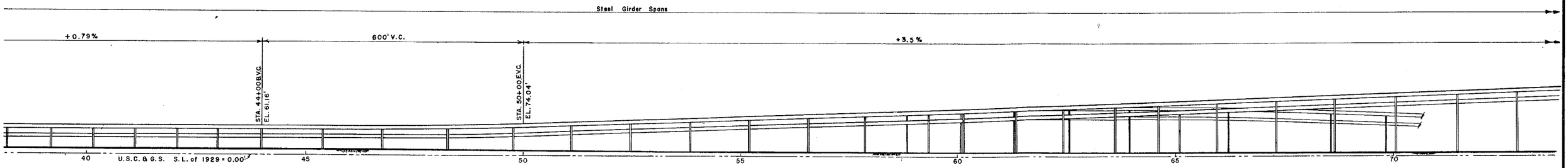
1°09'38"

AT POINT "TELEGRAPH"

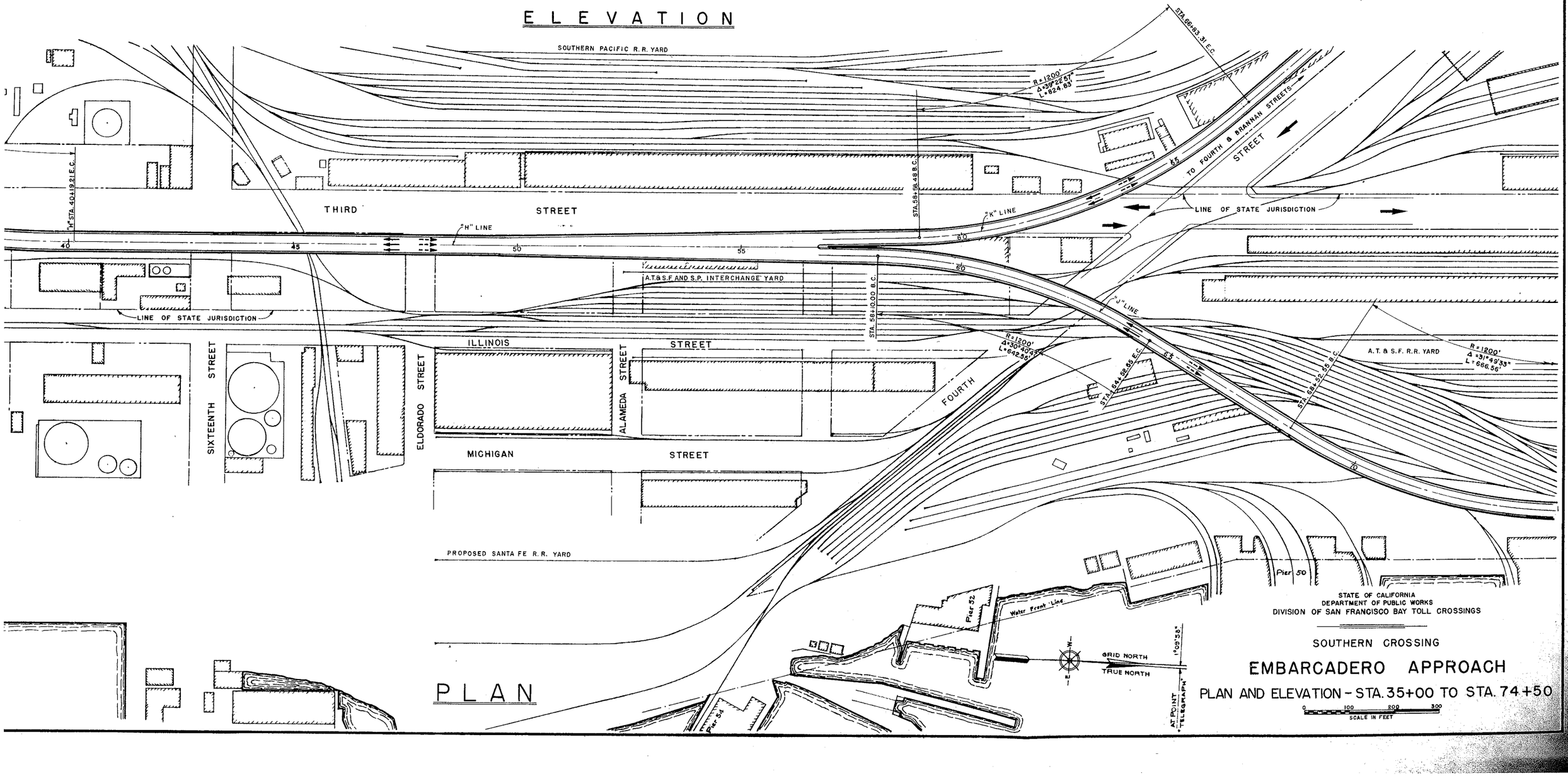
Pier 54

PLAN

PLAN



ELEVATION



PLAN

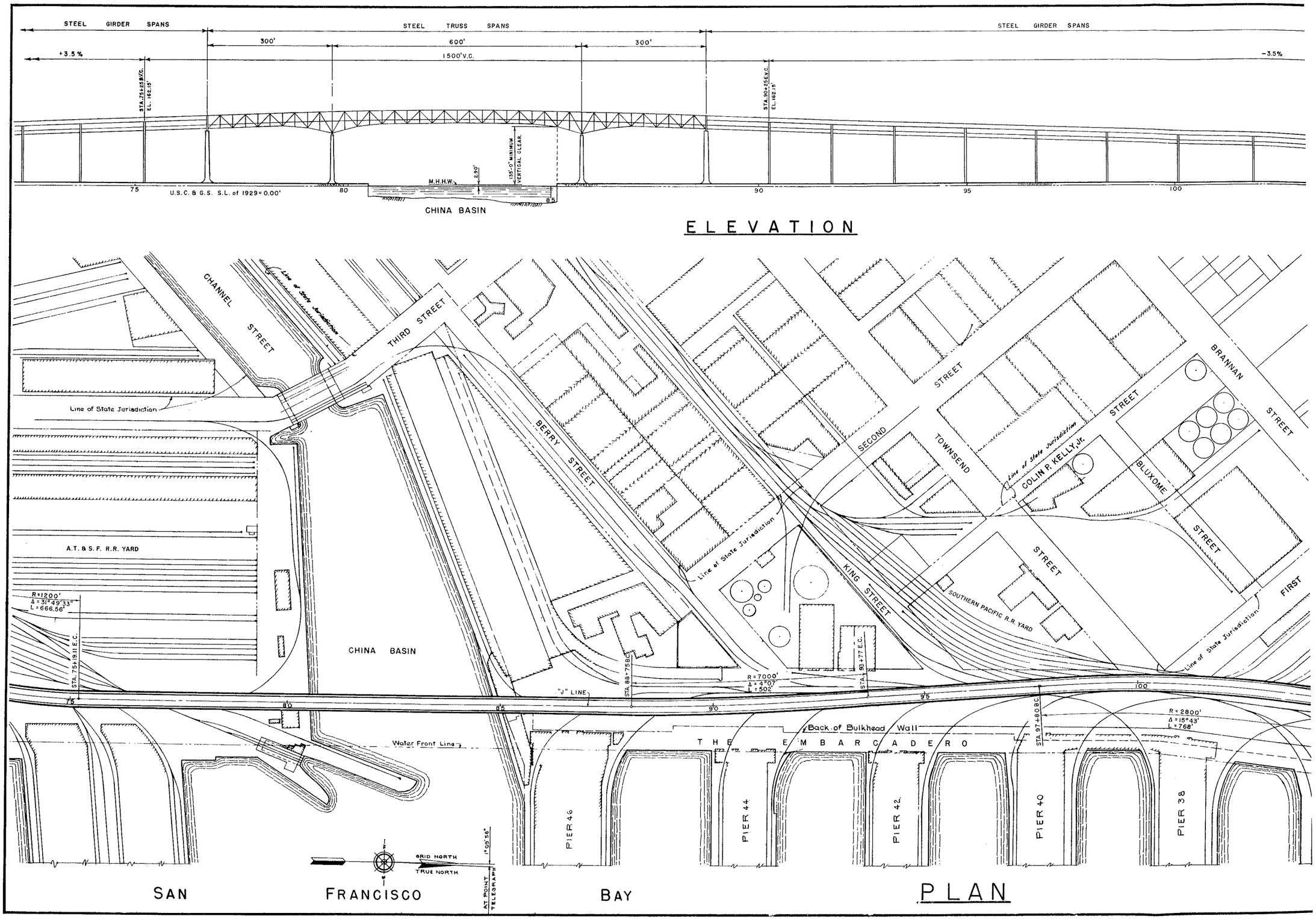
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

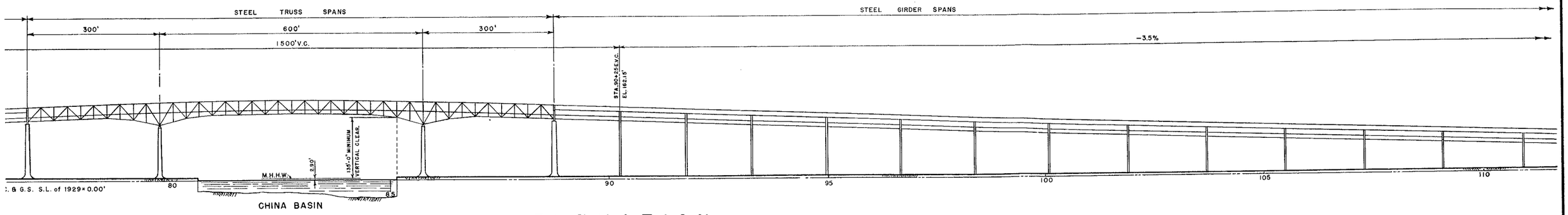
SOUTHERN CROSSING

EMBARCADERO APPROACH

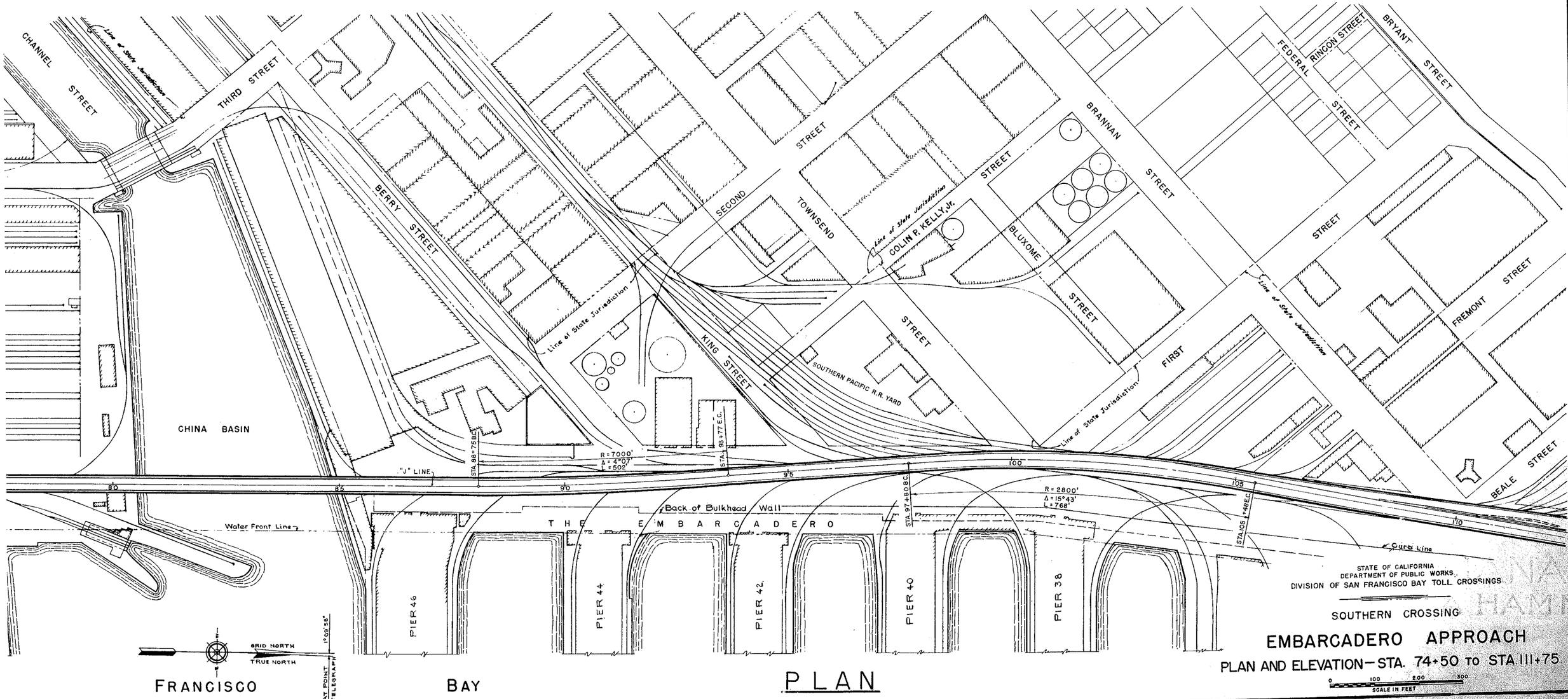
PLAN AND ELEVATION - STA. 35+00 TO STA. 74+50

0 100 200 300
SCALE IN FEET


STEEL GIRDER SPANS
STEEL TRUSS SPANS
STEEL GIRDER SPANS
300'
600'
300'
1500' V.C.
+3.5%
-3.5%
STA. 75+25 B.V.C.
EL. 162.15'
STA. 90+25 E.V.C.
EL. 162.15'
135'-0" MINIMUM VERTICAL CLEAR.
2.90'
M.H.H.W.
U.S.C. & G.S. S.L. of 1929 = 0.00'
CHINA BASIN
75
80
85
90
95
100
ELEVATION
CHANNEL STREET
Line of State Jurisdiction
THIRD STREET
BERRY STREET
SECOND STREET
TOWNSEND STREET
BRANNAN STREET
BLUXOME STREET
COLIN P. KELLY, Jr. STREET
KING STREET
FIRST STREET
SOUTHERN PACIFIC R.R. YARD
A.T. & S.F. R.R. YARD
R=1200'
Δ = 31°49'33"
L=666.56'
STA. 75+19.11 E.C.
CHINA BASIN
STA. 88+75 B.C.
R=7000'
Δ = 4°07'
L=502'
STA. 93+77 E.C.
"J" LINE
Water Front Line
Back of Bulkhead Wall
THE EMBARCADERO
STA. 97+80 B.C.
R=2800'
Δ = 15°43'
L=768'
PIER 46
PIER 44
PIER 42
PIER 40
PIER 38
GRID NORTH
TRUE NORTH
1°09'56"
AT POINT TELEGRAPH
SAN FRANCISCO BAY
PLAN



ELEVATION



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EMBARCADERO APPROACH

PLAN AND ELEVATION — STA. 74+50 TO STA. 111+75

SCALE IN FEET
0 100 200 300

STEEL GIRDER SPANS

-3.5% | 600' V.C. | +0.12% | 200' V.C. | -0.12% | 400' V.C. | 200' V.C. | -6.0% | +0.6%

Howard St. "On" Ramp

Mission St. "Off" Ramp

STA. 115+56 B.V.C. EL. 73.5'
STA. 121+56 E.V.C. EL. +63.5'
STA. 125+03 B.V.C. EL. +64.0'
STA. 127+03 EL. +64.0'
STA. 127+79 B.V.C. EL. +63.9'
STA. 131+79 E.V.C. El. Top Deck +63.6' Ramp +51.9'
STA. 133+79 EL. +64.0'
STA. 137+59 B.V.C. EL. +42.5'
STA. 138+59 EL. +11.5'

110 115 120 U.S.C. & G.S. S.L. of 1929 = 0.00' 125 130 135

ELEVATION

-3.5% | 300' V.C. | -5.67% | 100' V.C.

STA. 110+25 B.V.C. 86.90'
STA. 113+25 E.V.C. 73.15'
STA. 123+70 B.V.C. 13.84'
STA. 124+70 E.V.C. 11.0'

0.00' ℄ HARRISON ST.

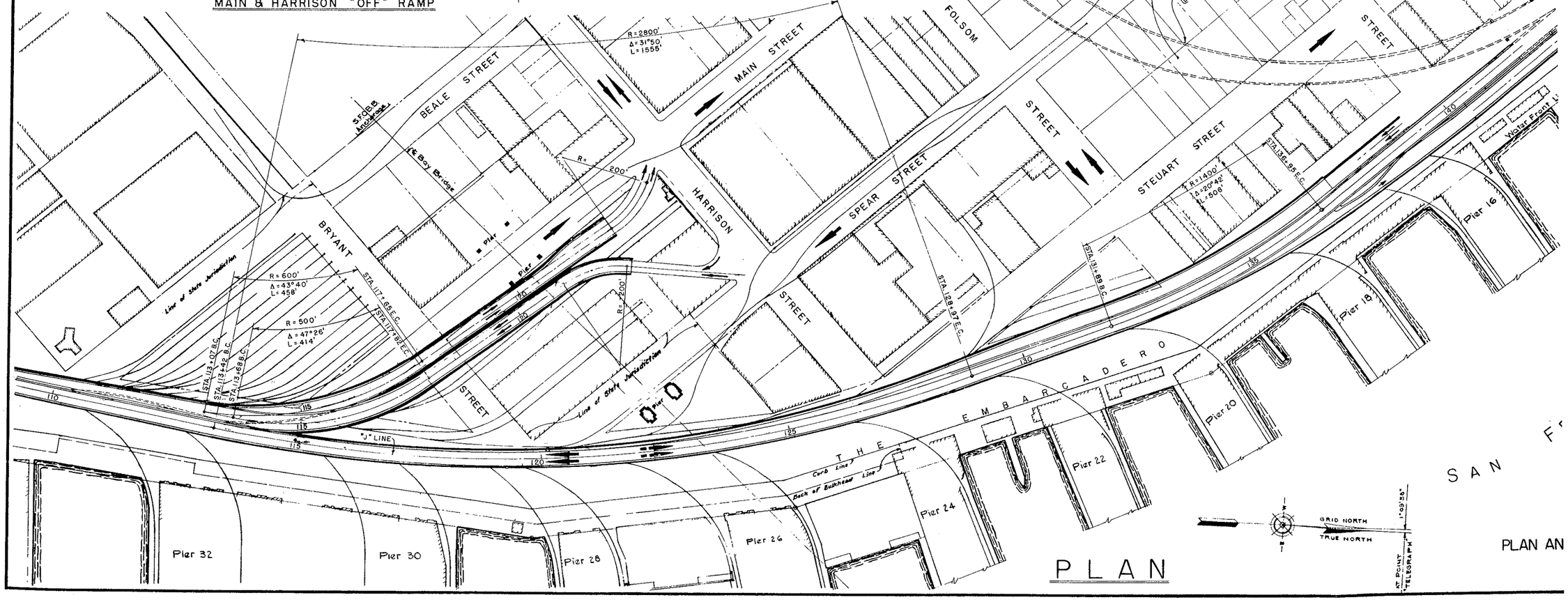
SPEAR & HARRISON "ON" RAMP

-3.5% | 300' V.C. | -6.0% | 100' V.C. | -0.66% | 100' V.C.

STA. 110+25 B.V.C. 64.90'
STA. 113+25 E.V.C. 50.5'
STA. 115+83 B.V.C. 35.66'
STA. 116+83 E.V.C. 32.33'
STA. 122+95 B.V.C. 28.33'
STA. 123+95 E.V.C. 28.0'

110 115 0.00' 120 ℄ BRYANT ST.

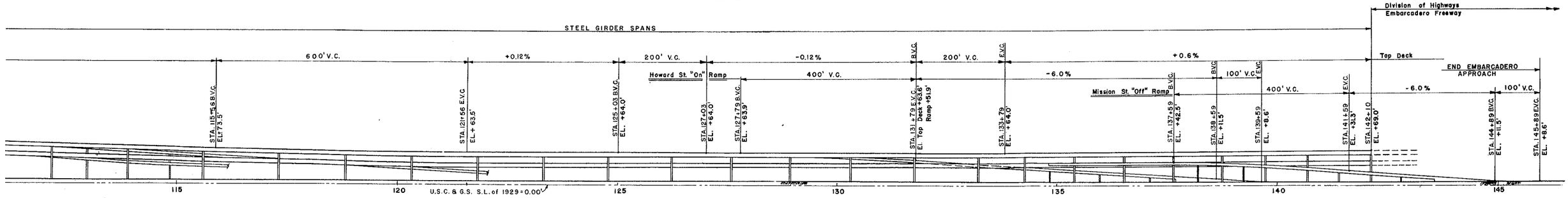
MAIN & HARRISON "OFF" RAMP

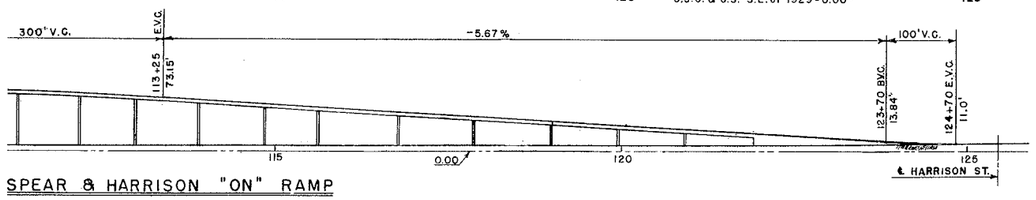


PLAN

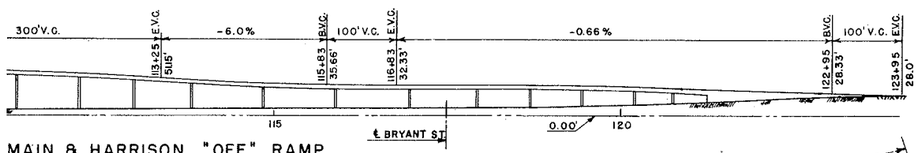
SAN F

PLAN AN



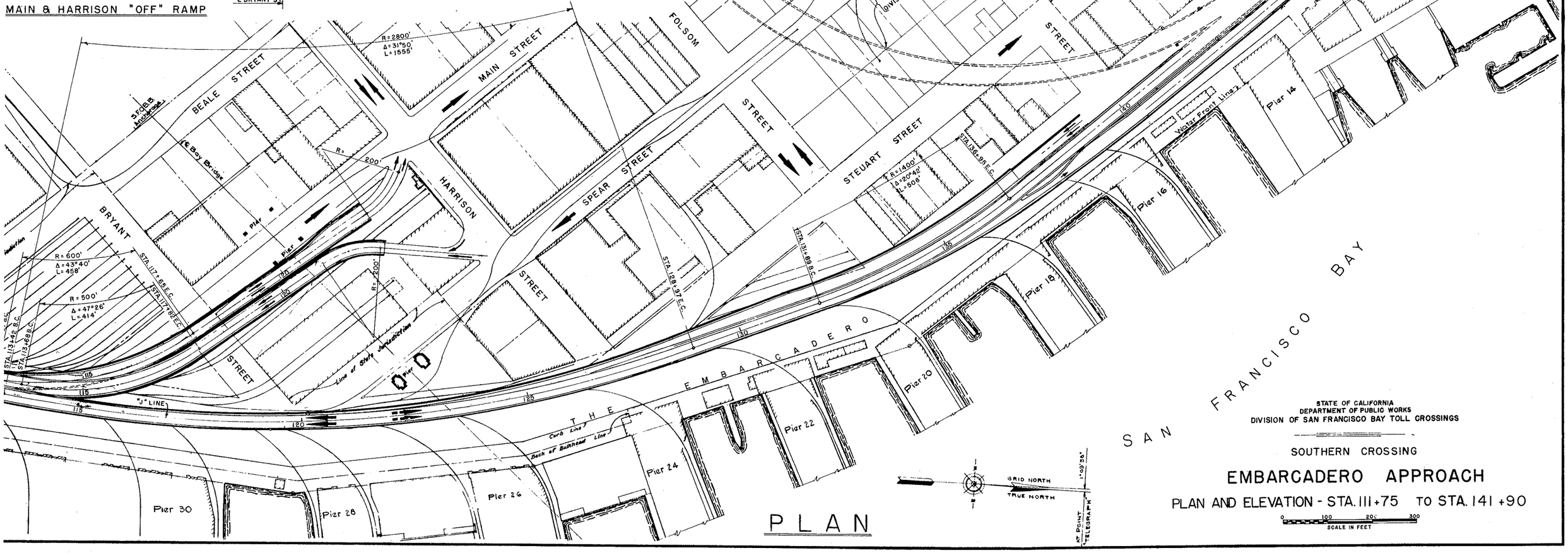


SPEAR & HARRISON "ON" RAMP



MAIN & HARRISON "OFF" RAMP

E L E V A T I O N.



PLAN

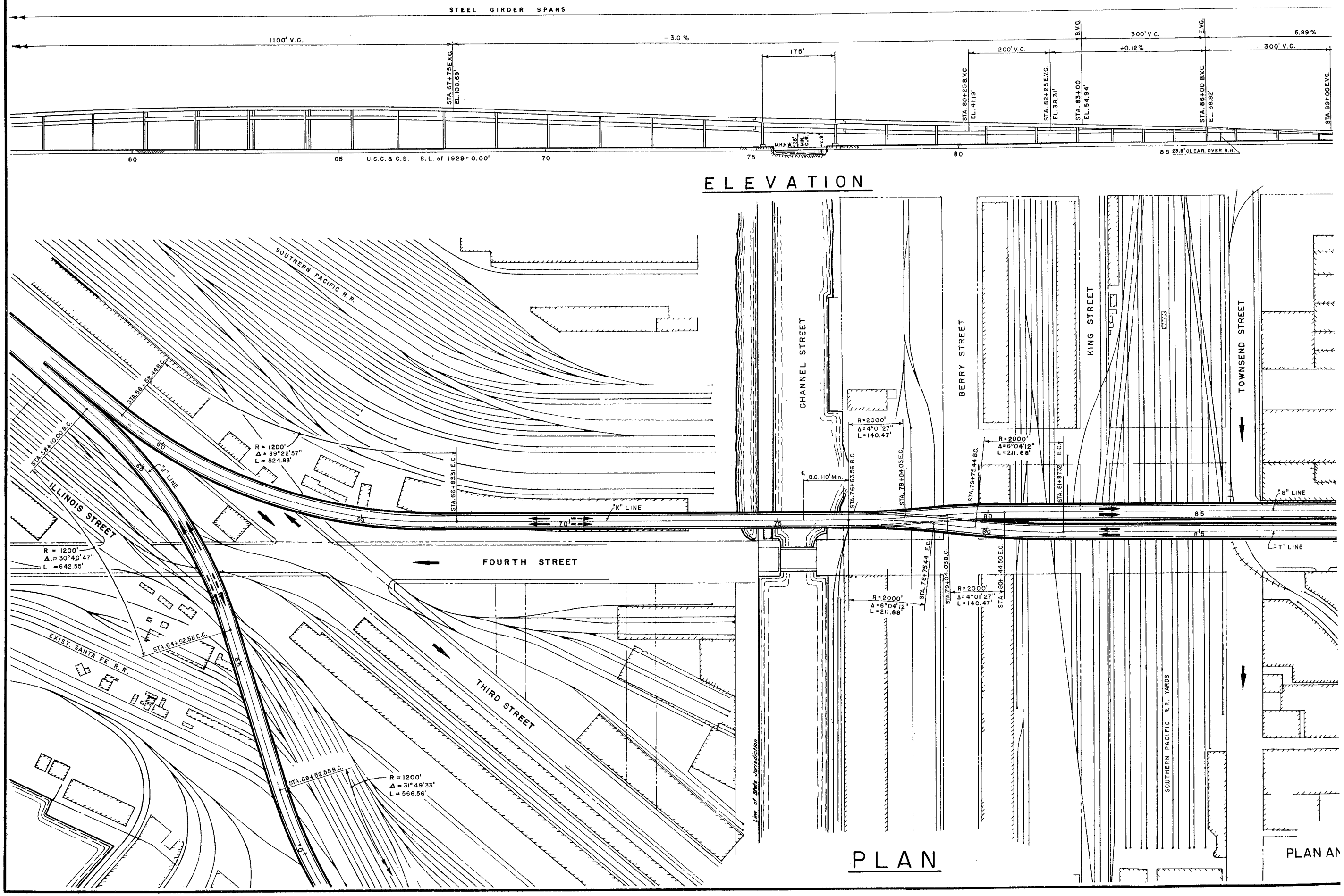
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

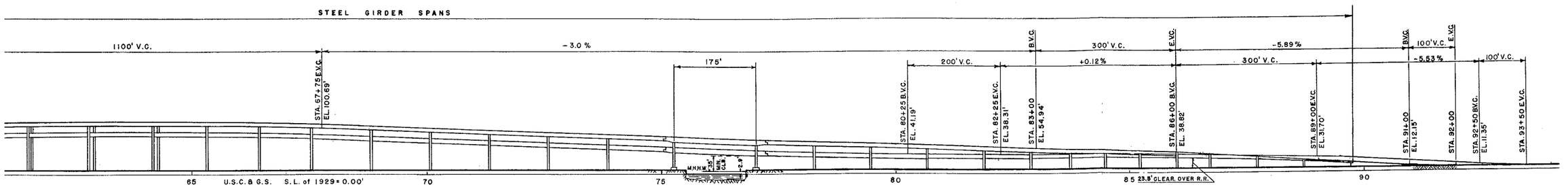
SOUTHERN CROSSING

EMBARCADERO APPROACH

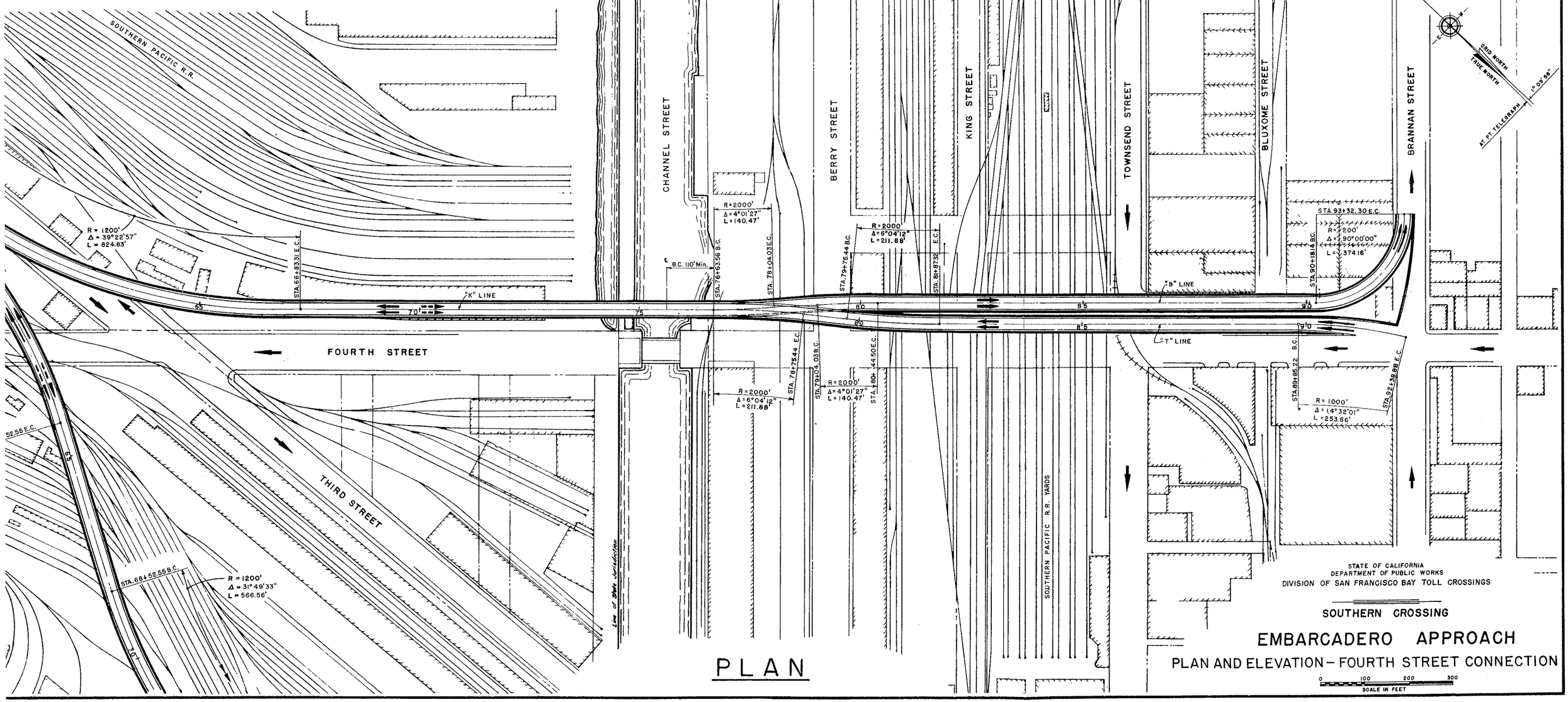
PLAN AND ELEVATION - STA. 111+75 TO STA. 141+90

0 100 200 300
SCALE IN FEET


STEEL GIRDER SPANS
1100' V.C.
-3.0 %
175'
200' V.C.
B.V.C.
300' V.C.
E.V.C.
+0.12%
-5.89%
300' V.C.
STA. 67+75 E.V.C.
EL. 100.69'
STA. 80+25 B.V.C.
EL. 41.19'
STA. 82+25 E.V.C.
EL. 38.31'
STA. 83+00
EL. 54.94'
STA. 86+00 B.V.C.
EL. 38.82'
STA. 89+00 E.V.C.
M.H.H.W. 5.5'
MIN. CLR. 2.9'
60
65
U.S.C.& G.S. S.L. of 1929 = 0.00'
70
75
80
85 23.5' CLEAR OVER R.R.
ELEVATION
SOUTHERN PACIFIC R.R.
STA. 58+58.48 B.C.
R = 1200'
Δ = 39°22'57"
L = 824.83'
STA. 58+10.00 B.C.
"J" LINE
ILLINOIS STREET
R = 1200'
Δ = 30°40'47"
L = 642.55'
EXIST. SANTA FE R.R.
STA. 64+52.56 E.C.
STA. 66+18.31 E.C.
"K" LINE
FOURTH STREET
THIRD STREET
STA. 68+52.55 B.C.
R = 1200'
Δ = 31°49'33"
L = 566.56'
CHANNEL STREET
R = 2000'
Δ = 4°01'27"
L = 140.47'
B.C. 110' Min.
STA. 76+63.56 B.C.
STA. 78+04.03 E.C.
R = 2000'
Δ = 6°04'12"
L = 211.68'
STA. 78+75.44 B.C.
STA. 79+04.03 B.C.
BERRY STREET
STA. 79+75.44 B.C.
R = 2000'
Δ = 6°04'12"
L = 211.68'
STA. 81+87.32 E.C.
KING STREET
TOWNSEND STREET
"B" LINE
"T" LINE
Line of State Jurisdiction
SOUTHERN PACIFIC R.R. YARDS
PLAN
PLAN AN



ELEVATION



PLAN

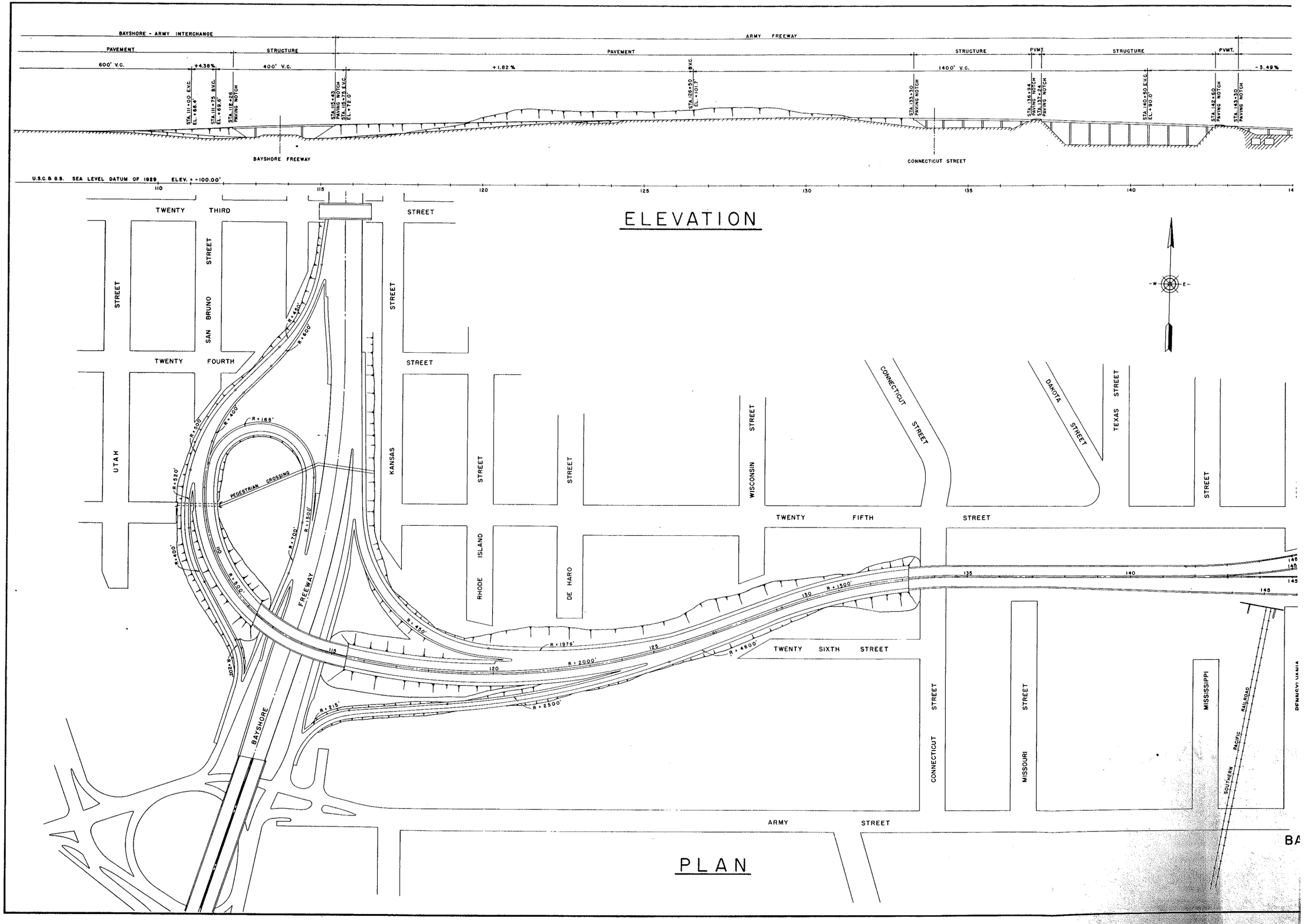
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

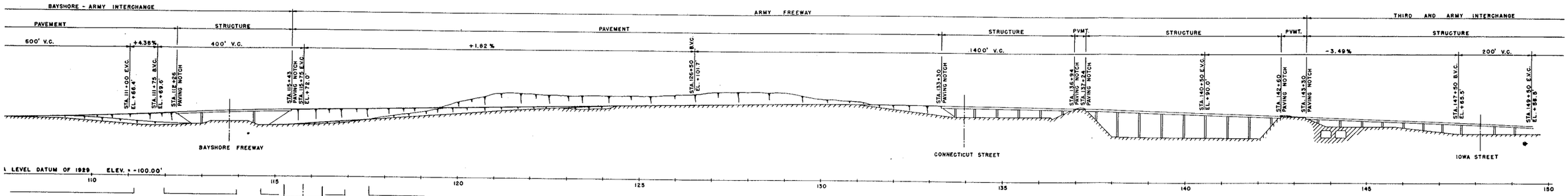
SOUTHERN CROSSING

EMBARCADERO APPROACH

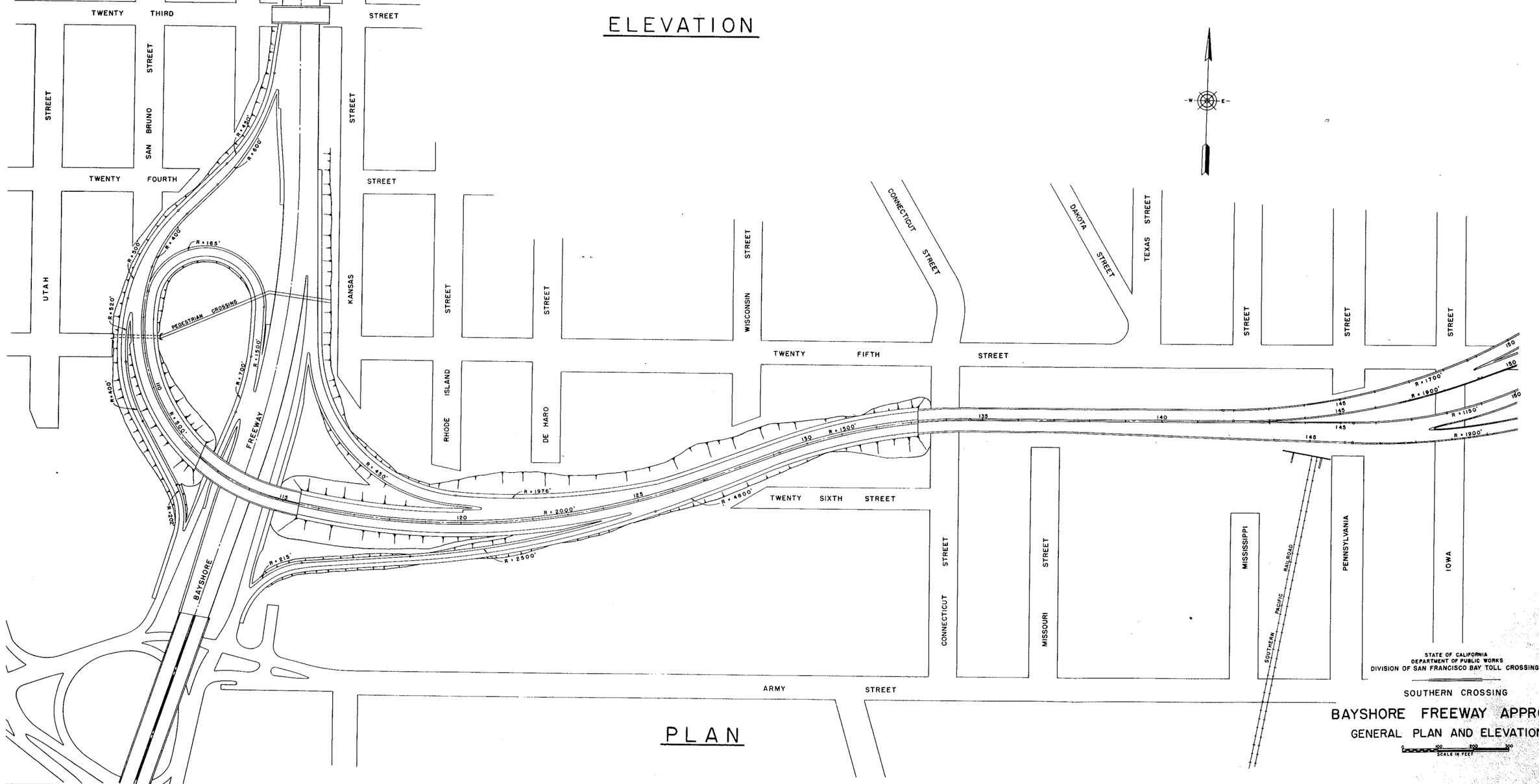
PLAN AND ELEVATION – FOURTH STREET CONNECTION

0 100 200 300
SCALE IN FEET


BAYSHORE - ARMY INTERCHANGE
PAVEMENT
600' V.C.
+4.38%
STRUCTURE
400' V.C.
PAVEMENT
+1.82 %
ARMY FREEWAY
STRUCTURE
1400' V.C.
PVMT.
STRUCTURE
PVMT.
-3.49%
STA. 111+00 E.V.C. EL. +66.4
STA. 111+75 B.V.C. EL. +69.8
STA. 112+26 PAVING NOTCH
STA. 115+43 PAVING NOTCH
STA. 115+75 E.V.C. EL. +72.0
STA. 128+50 B.V.C. EL. +101.17
STA. 133+30 PAVING NOTCH
STA. 135+74 PAVING NOTCH
STA. 137+24 PAVING NOTCH
STA. 140+50 E.V.C. EL. +90.0
STA. 142+60 PAVING NOTCH
STA. 143+30 PAVING NOTCH
BAYSHORE FREEWAY
CONNECTICUT STREET
U.S.C.& G.S. SEA LEVEL DATUM OF 1929 ELEV. + -100.00'
110
115
120
125
130
135
140
ELEVATION
TWENTY THIRD STREET
TWENTY FOURTH STREET
STREET
SAN BRUNO STREET
UTAH STREET
KANSAS STREET
RHODE ISLAND STREET
DE HARO STREET
WISCONSIN STREET
CONNECTICUT STREET
DAKOTA STREET
TEXAS STREET
TWENTY FIFTH STREET
TWENTY SIXTH STREET
CONNECTICUT STREET
MISSOURI STREET
MISSISSIPPI
SOUTHERN PACIFIC RAILROAD
ARMY STREET
BAYSHORE FREEWAY
PEDESTRIAN CROSSING
R=430'
R=600'
R=185'
R=400'
R=520'
R=1150'
R=700'
R=500'
R=450'
R=1976'
R=2000'
R=1500'
R=4600'
R=2500'
R=215'
R=220'
PLAN



ELEVATION



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

BAYSHORE FREEWAY APPROACH

GENERAL PLAN AND ELEVATION

SCALE IN FEET

P A R T VI

E A S T B A Y A P P R O A C H E S

The East Bay approach system of the Southern Crossing has been delineated to conform with the wording of the Statutes. This approach system is divided into two main sections: (1) the Eastshore Freeway Approach, and (2) the Alameda Approach.

The Eastshore Freeway Approach, see Figure VI-1, extends from the bridgehead on Bay Farm Island to a connection with the Eastshore Freeway at Hegenberger Road. It consists of the following components:

(a) The "Bay Farm Island Freeway" between the bridgehead and an interchange at the southern end of the existing Bay Farm Island Bridge.

(b) The "Bay Farm Island Interchange" at the southern end of the existing Bay Farm Island Bridge.

(c) The "San Leandro Bay Freeway" which extends from the Bay Farm Island Interchange to a connection with the Eastshore Freeway at the Hegenberger-Eastshore Freeway Interchange.

The Alameda Approach, see Figures VI-8 and VI-14, extends from the south end of the existing Bay Farm Island Bridge westerly along the south shore of Alameda, and thence across Alameda to connections with the existing Posey Tube and with the proposed Webster Street Tube. It consists of the following sections:

(a) The existing Bay Farm Island Bridge.

(b) The "Southshore Freeway" extending across the tidelands along the southern shore of the City of Alameda with a connection to Webster Street.

(c) The "Main-Atlantic Freeway" generally paralleling Main Street, Atlantic Avenue, and Webster Street to connections with both the existing Posey Tube and the proposed Webster Street Tube.

(d) The Webster Street Tube paralleling the existing Posey Tube under the Oakland Inner Harbor and connecting with Webster Street in Oakland.

EASTSHORE FREEWAY APPROACH

Bay Farm Island Freeway

This will be a six-lane divided freeway extending from the bridgehead on the southwesterly shore of the island to the existing Bay Farm Island Interchange. It is to be built west of Maitland Drive, which will continue in service as a frontage road.

The interchange with Mecartney Road (formerly designated as Kilkenny Road) will be of the simple diamond type, with the freeway carried overhead. (See Figure VI-2.)

Bay Farm Island Interchange

This interchange, located at the northwesterly shore of the island, will directly interconnect the existing Bay Farm Island Bridge, the Bay Farm Island Freeway, and the San Leandro Bay Freeway. It will distribute transbay traffic to the East Bay approach system and will also carry local traffic traveling between Alameda and Bay Farm Island. (See Figure VI-3.)

Traffic movements between the Southern Crossing and the San Leandro Bay Freeway through the Interchange will be direct, since it is anticipated that the major Southern Crossing traffic movement will be to the south rather than to Alameda. The movements to and from Alameda will be somewhat more indirect.

This interchange requires the acquisition of a considerable amount of right of way from the Alameda Municipal Golf Course.

San Leandro Bay Freeway

This four-lane divided freeway, with provisions for widening to six lanes, is on an entirely new alignment. Starting at the Bay Farm Island Interchange the freeway extends easterly along the north shore of Bay Farm Island paralleling Doolittle Drive, and thence across the tidal mud flats at the east end of San Leandro Bay paralleling Hegenberger Road to its connection with Eastshore Freeway. (See Figures VI-4 to VI-7 inclusive.)

Doolittle Drive and Hegenberger Road will be utilized as frontage roads for local traffic to the Alameda Municipal Golf Course, Naval Air Reserve installations, the Oakland Airport, and adjacent industrial plant sites.

On-ramps and off-ramps will connect with these frontage roads. New ramps will be constructed at the Hegenberger-Eastshore Freeway Interchange to handle the various traffic movements as shown on Figure VI-7.

A future freeway generally paralleling the Eastshore Freeway, possibly following Doolittle Drive to Hayward, has been suggested when and if the volume of traffic on the Eastshore Freeway exceeds its capacity. Therefore, provisions have been made for a future freeway connection to, or extension of, the San Leandro Bay Freeway in the vicinity of the intersection of Doolittle Drive, Hegenberger Road, and Jones Avenue.

The freeway lanes spread apart at this point to facilitate the construction of a future interchange, as shown on Figure VI-6.

The somewhat circuitous alignment of the San Leandro Bay Freeway is required to avoid two major obstacles, namely, (1) the Metropolitan Oakland International Airport, and (2) San Leandro Bay, a navigable waterway and future harbor area of the Port of Oakland.

In the area north and west of the proposed freeway, that is, the navigable waters and tidal flats of San Leandro Bay, a harbor development is planned by the Port of Oakland. This development involves deep water harbor facilities including a 1500-foot radius ship turning basin; about 3-1/2 miles of wharves with transit sheds; and adjacent industrial sites with streets, railroad spur tracks, and switching yards. Even without this planned harbor development, with only the present navigation channel to be crossed, a route across San Leandro Bay would be costly and would offer inferior traffic service. A high-level crossing at this location would not be practical because of proximity to the Airport. A low-level crossing with a movable span would involve periodic interruption to vehicular traffic. A subaqueous tube crossing has not been considered because of the inherent cost. Therefore, it was concluded that a direct connection across San Leandro Bay is impractical.

The area south of the proposed freeway is occupied by the Metropolitan Oakland International Airport. A route through this installation would be impractical for obvious reasons.

Prior to World War II Maitland Drive extended along the south shore of Bay Farm Island and along the south edge of the present airport to the extension of Jones Avenue. A freeway along the south shore of Bay Farm Island and along the general line formerly followed by Maitland Drive would be situated between the present airport and the future offshore runway. It would be necessary to depress the freeway beneath a surface taxiway. East of the airport the freeway would require a railroad separation and additional highway interchange facilities to connect with the Eastshore Freeway. Although this route would be more direct for traffic traveling to and from the south leg of the Eastshore Freeway, it would be more costly than the proposed San Leandro Bay Freeway.

A route around the northwest shore of San Leandro Bay, although affording the most direct connection to the Eastshore Freeway, would necessarily begin at the north end of the existing Bay Farm Island Bridge; and, therefore, would not correspond with the wording or the apparent intent of the Statutes.

Practically all of the right of way required for the San Leandro Bay Freeway must be acquired from the cities of Alameda and Oakland.

ALAMEDA APPROACH

Bay Farm Island Bridge

The Bay Farm Island Bridge, a four-lane structure to be used without major alteration, was constructed by the Division of Highways in accordance with a Department of the Army instrument of approval dated March 31, 1950. The horizontal

clearance now provided with the single bascule leaf is 92 fee
However, the design contemplates future conversion into a dou
ble leaf bascule span of 200 feet clear opening if and when th
channel between San Leandro Bay and San Francisco Bay is devel
oped for ocean-going vessels.

This Bridge was not constructed to "freeway standards",
that is, it has relatively short radius curves with restricted
sight distances, a movable span, and is accessible to pedes-
trians. These factors limit operating speeds for Alameda
traffic to 30-35 miles per hour.

It should be noted that the future ship channel at this
point might result in frequent openings to permit the passage
of ocean-going vessels, thereby impairing the usefulness of
the Alameda approaches to the Southern Crossing.

Southshore Freeway

The Statutes specify "A connection from Bay Farm Island
to a point on the southerly shore of the City of Alameda and
a freeway along the southerly shore of the City of Alameda
from such a point to a southerly prolongation of Main Street
. . . with on- and off-ramps connecting the freeway with the
southerly end of Webster Street". The City of Alameda has re-
served for highway purposes a strip of tidelands along the
south shore. This four lane divided freeway will be built on
a hydraulic sand fill in these shallow tidal waters. (See
Figures VI-8 to VI-11, inclusive.)

The interchange at the north end of the existing Bay
Farm Island Bridge allows off-movements from the Bridge to
city streets and on-movements to the Bridge only. Internal

traffic traveling between the two ends of the City of Ala-
meda must use city streets. (See Figure VI-9.)

The connection from the Southshore Freeway to the
southern end of Webster Street passes directly through and
bisects the property now owned by the U. S. Maritime Service.
(See Figure VI-10.)

An application for approval of location and plans for
the Southshore Freeway fill was submitted to the Department
of the Army on September 27, 1954. Since this entire fill
will be located on the shoreward side of the established
combined pierhead-bulkhead line, the Corps of Engineers,
U. S. Army, returned the application on October 5, 1954, and
advised this Division that Department of the Army approval
was not necessary. However, it will be required for the
disposal of any unsuitable material which might be dredged
from along the line of the proposed Freeway.

Main-Atlantic Freeway

This four-lane divided freeway, see Figures VI-11,
VI-12 and VI-13, crosses Alameda paralleling Main Street,
Atlantic Avenue, and Webster Street to its connection with
the existing Posey Tube and the proposed Webster Street Tube.
Ramps in the vicinity of the Main-Atlantic intersection will
be provided for connections to city streets.

A portion of this freeway extending along Main Street
and its prolongation is within the easterly boundary of the
Naval Air Station. Any alternate alignment would cut through
or in front of the new Encinal High School.

The portion of this freeway extending from Main to Webster Street will be a four-lane elevated structure located along the route now followed by Atlantic Avenue. With an elevated structure over Atlantic Avenue, this street will remain in use as a city street; and relocation of the Alameda Belt Line Railroad parallel to Atlantic Avenue will be unnecessary.

The route shown in this report assumes that the needed right of way can be obtained from the Navy and from the various government housing projects affected.

Webster Street Tube

This connection between Alameda and Oakland will be a new two-lane vehicular tube beneath the Oakland Inner Harbor. It will be located approximately one block west of the existing two-lane Posey Tube and will connect with Webster Street in Oakland. This Webster Street Tube will be operated one-way southbound from Oakland to Alameda and the present Posey Tube one-way northbound from Alameda to Oakland. (See Figure VI-14).

Chapter 1056 of the Statutes of 1953 provided that the proposed Webster Street Tube was to be financed and built as an approach to the Southern Crossing. However, local interests, desiring to expedite the construction of the tube, have requested that the tube be financed from State Highway Funds.

In accordance with this request appropriations to initiate acquisition of rights of way for the new Estuary tube were

voted by the California State Highway Commission. However, the Commission stated this action was ". . . taken without prejudice to any other method of financing in the near future."

The tube construction is similar to that previously described for the main Southern Crossing tubes, therefore a detailed discussion is omitted here.

ALAMEDA

ALAMEDA APPROACH

SAN LEANDRO BAY

E1,500,000 N460,000

N460,000 E1,495,000

SAN FRANCISCO BAY

EXISTING BAY FARM ISLAND BRIDGE

SAN LEANDRO DRIVE

DOOLITTLE DRIVE

AIRPORT CHANNEL

BAY FARM ISLAND INTERCHANGE

ALAMEDA MUNICIPAL GOLF COURSE

ISLAND FREEWAY

MAITLAND DRIVE

E1,500,000 N455,000

MECARTNEY ROAD (Formerly KILKENNY ROAD)

N455,000 E1,495,000

U.S.C.&G.S. Farm 2

BAY FARM ISLAND

TO SAN FRANCISCO

SOUTHERN CROSSING

BAY

OAKLAND

N460,000 E1,505,000

EASTSHORE

PROPOSED SAN LEANDRO BAY DEVELOPMENT

EARHART ROAD

880 FREEWAY

CITY OF ALAMEDA

CITY OF OAKLAND

METROPOLITAN OAKLAND INTERNATIONAL AIRPORT

POSSIBLE FUTURE FREEWAY CONNECTION

Notes: Coordinates, Bearings and distances are on the California Coordinate System Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.

M.H.H.W. = Elev. + 2.90 at Potrero Point
S.L. = Elev. 0.00 = U.S.C.&G.S. Sea Level Datum of 1929
M.L.L.W. = Elev. − 3.40 at Potrero Point

ALAMEDA

SAN LEANDRO BAY

OAKLAND

EXISTING BAY FARM ISLAND BRIDGE

AIRPORT CHANNEL

SAN LEANDRO DRIVE

DOOLITTLE DRIVE

BAY FARM ISLAND INTERCHANGE

ALAMEDA MUNICIPAL GOLF COURSE

ISLAND FREEWAY

MAITLAND DRIVE

MECARTNEY ROAD (Formerly KILKENNY ROAD)

BAY FARM ISLAND

ALAMEDA CITY OF — OAKLAND CITY OF

METROPOLITAN OAKLAND INTERNATIONAL AIRPORT

EARHART ROAD

EASTSHORE FREEWAY

PROPOSED SAN LEANDRO BAY DEVELOPMENT

HEGENBERGER - EASTSHORE FREEWAY INTERCHANGE

TO SAN JOSE

HEGENBERGER ROAD

JONES AVENUE

POSSIBLE FUTURE FREEWAY CONNECTION

BAY FARM BRIDGE

C. & G. S. rm 2

N460,000 E1,505,000

N455,000 E1,500,000

N455,000 E1,495,000

N455,000 E1,510,000

1°04' 16" W of Grid North

W of True North

Notes: Coordinates, Bearings and distances are on the California Coordinate System Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.

M.H.H.W. = Elev. + 2.90 at Potrero Point
S.L. = Elev. 0.00 = U.S.C. & G.S. Sea Level Datum of 1929
M.L.L.W. = Elev. − 3.40 at Potrero Point

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

GENERAL PLAN

0 500 1000 2000
SCALE IN FEET

TRANSBAY SECTION

BAY FARM ISLAND FREEWAY

MOLE FILL — PAVEMENT ON FILL — STRUCTURE — PAVEMENT ON FILL

LEVEL AT EL.+12.00 — + 0.12% — 450' V.C. — 900' V.C. — 450' V.C. — -0.12%

STA. 580+00.00 EL.+12.00'

STA. 592+50.00 B.V.C. EL.+13.50'

STA. 597+00.00 P.R.V.C. EL.+20.59'

STA. 600+68.05 PAVING NOTCH

STA. 602+24.05 PAVING NOTCH

STA. 606+00.00 P.R.V.C. EL.+20.59'

STA. 610+50.00 E.V.C. EL.+13.50'

STA. 611+00.00 EL.+13.44'

U.S.C.&G.S. SEA LEVEL DATUM OF 1929 EL.-100.00'

580 585 590 595 600 605 610

ELEVATION

1° 06' 16" At Farm 2

Grid North

True North

581+73.11 B.C.

TO SAN FRANCISCO

N 87° 18' 00" E 590

36'

10' Median

36'

585

R = 2000'

Δ = 68° 04' 28"

L = 2376.25'

R = 1200'

R = 2012'

R = 2000'

R = 2000'

590

595

600

605

B A Y

F A R M

I S L A N D

E1,496,000 N455,000

E1,497,000 N454,000

E1,496,000 N455,000

E1,497,000 N456,000

MECARTNEY ROAD

605+51.56 E.C.

R = 2000'

N 19° 13' 32" E 2542.73'

610

R = 2000'

605

600

595

EXISTING SHORELINE

COUNTY ROAD

GARDEN ROAD

ROAD

DEP
DIVISION OF SA

SOU

EASTSHORE

PLAN AND ELEVATION

PLAN

BAY FARM ISLAND FREEWAY

PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL

+0.12% | 450' V.C. | 900' V.C. | 450' V.C. | -0.12% | -0.17%

STA. 592+50.00 B.V.C. EL.+13.50'
STA. 597+00.00 P.R.V.C. EL.+20.59'
STA. 600+68.05 PAVING NOTCH
STA. 602+24.05 PAVING NOTCH
STA. 606+00.00 P.R.V.C. EL.+20.59'
STA. 610+50.00 E.V.C. EL.+13.50'
STA. 611+00.00 EL.+13.44'

UM OF 1929 EL.-100.00'

585 590 595 600 605 610 614 618 620

ELEVATION

PLAN

581+75.11 B.C.

1° 04' 16" At Form 2

Grid North

True North

W E

R = 2000'
Δ = 68° 04' 28"
L = 2376.25'

36' 10' Median 36'

585 590 595 600 605 610

R = 2000' R = 1200' R = 2012' R = 2000' R = 2000'

E1,496,000 N455,000

E1,497,000 N454,000

E1,497,000 N456,000

MECARTNEY ROAD

BAY FARM ISLAND

608+51.36 E.C.

R = 2000'

2542.73' N 19° 13' 32" E

615 620

TO EASTSHORE FREEWAY

36' 10' Median 36'

EXISTING SHORELINE

COUNTY ROAD

GARDEN ROAD

MAITLAND DRIVE

N456,000 E1,498,000

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION - STA. 580+00 TO STA. 620+00

0 100 200 300
SCALE IN FEET

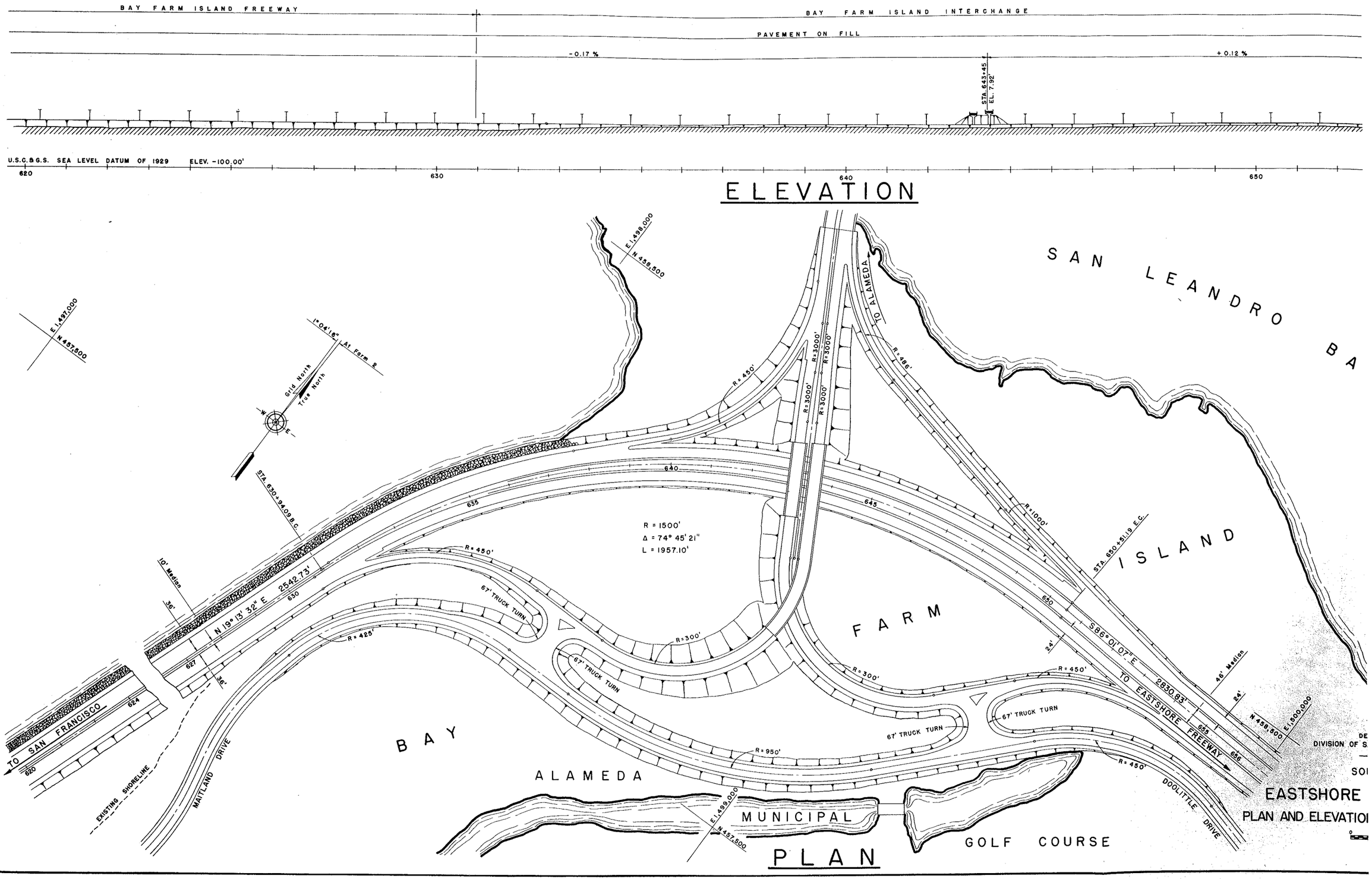

BAY FARM ISLAND FREEWAY
BAY FARM ISLAND INTERCHANGE
PAVEMENT ON FILL
-0.17 %
+0.12 %
STA. 643+45
EL. 7.92'
U.S.C.&G.S. SEA LEVEL DATUM OF 1929 ELEV. -100.00'
620
630
640
650
ELEVATION
E. 1,457,000
N 457,500
E. 1,458,000
N 458,500
1°04'16" At Form 2
Grid North
True North
STA. 630+94.08 P.C.
N 19° 13' 32" E 2542.73'
10' Median
36'
627
630
635
640
645
R = 1500'
Δ = 74° 45' 21"
L = 1957.10'
R=450'
R=425'
R=300'
R=950'
R=1000'
R=3000'
R=486'
67' TRUCK TURN
TO ALAMEDA
SAN LEANDRO BA
ISLAND
FARM
STA. 650+45.19 E.C.
S 86° 01' 07" E 2830.83'
24'
46' Median
TO EASTSHORE FREEWAY
655
656
N 458,500
E. 1,460,000
TO SAN FRANCISCO
624
620
EXISTING SHORELINE
MAITLAND DRIVE
BAY
ALAMEDA
MUNICIPAL
GOLF COURSE
DOOLITTLE DRIVE
E. 1,459,000
N 457,500
PLAN
DE
DIVISION OF S
SOI
EASTSHORE
PLAN AND ELEVATIOI

FIG. VI-3

AY FARM ISLAND FREEWAY

BAY FARM ISLAND INTERCHANGE

PAVEMENT ON FILL

-0.17 %

+0.12 %

STA. 643+45
EL. 7.92'

I OF 1929 ELEV. -100.00'

630 640 650 656

ELEVATION

E 1,498,000
N 459,500

1°04'16" At Form 2

Grid North

True North

STA. 630+94.09 B.C.

10' Median

36'

N 19° 13' 32" E 2542.73'

627

624

35'

R = 450'

R = 3000'

R = 3000'

R = 3000'

TO ALAMEDA

R = 485'

SAN LEANDRO BAY

640

635

645

R = 1500'
Δ = 74° 45' 21"
L = 1957.10'

R = 1000'

STA. 650+51.19 P.C.

ISLAND

650

24'

S 86° 01' 07" E 2830.83'

46' Median

24'

655

656

N 456,800

E 1,500,000

R = 450'

67' TRUCK TURN

R = 425'

R = 300'

67' TRUCK TURN

R = 300'

FARM

R = 450'

TO EASTSHORE FREEWAY

67' TRUCK TURN

67' TRUCK TURN

BAY

R = 950'

ALAMEDA

MAITLAND DRIVE

R = 450'

DOOLITTLE DRIVE

E 1,499,000

N 457,500

MUNICIPAL GOLF COURSE

N 459,500

E 1,500,000

PLAN

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION - STA. 620+00 TO STA. 656+00

0 100 200 300
SCALE IN FEET

SAN LEANDRO BAY FREEWAY

PAVEMENT ON FILL

+0.12%

U.S.C. & G.S. SEA LEVEL DATUM OF 1929 ELEV. -100.00'

656 660 665 670 675 680 685

ELEVATION

SAN LEANDRO BAY

CITY OF OAKLAND

CITY OF ALAMEDA

PROPOSED SAN LEANDRO BAY DEVELOPMENT

N 459,500
E 1,502,000

N 458,500
E 1,501,000

685
680
675
670
665

R = 1500'
Δ = 53°50' 05"
L = 1409.39'

STA. 678+82.02 P.C.

45° MEDIAN

25'

24'

E 1,500,000
N 458,500

TO SAN FRANCISCO
2830.83'
S 86° 01' 07" E

656

DOOLITTLE DRIVE

EARHART ROAD

SAN LEANDRO BAY

SAN LEANDRO ISLAND

FARM

N 457,500
E 1,502,000

PLAN

FIG. VI-4

SAN LEANDRO BAY FREEWAY

PAVEMENT ON FILL

% +0.12 %

675 680 685 690 695 700 704

ELEVATION

PLAN

B A Y

PROPOSED
SAN LEANDRO BAY
DEVELOPMENT

A I R P O R T C H A N N E L

I S L A N D

F A R M

E A R H A R T R O A D

D O O L I T T L E D R I V E

TO EASTSHORE FREEWAY

N 458,500
E 1,502,000

N 457,500
E 1,502,000

N 457,500
E 1,503,000

N 457,500
E 1,504,000

R = 1500'
Δ = 53°50' 05"
L = 1409.39'

STA. 678+82.02 B.C.

STA. 682+91.41 E.C.

S 32° 11' 02" E
5451.75'

1°04' 16" At Farm 2

True North

Grid North

685 690 695 700 705

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION - STA. 656+00 TO STA. 704+00

0 100 200 300
SCALE IN FEET

SAN LEANDRO BAY FREEWAY

PAVEMENT ON FILL

+0.12%

450' V.C.

STA. 730+55.00 B.V.C.
EL. +18.38'

U.S.C. & G.S. SEA LEVEL DATUM OF 1929 ELEV. -100.00'

704 705 710 715 720 725 730

ELEVATION

N 457,000
E 1,504,500

PROPOSED SAN LEANDRO BAY DEVELOPMENT

AIRPORT

CHANNEL

N 455,000
E 1,505,500

N 456,000
E 1,504,500

TO SAN FRANCISCO

S 32° 11' 02" E 5451.75'

704 705 710 715 720 725 730

R = 1000'

DOOLITTLE DRIVE

BAY

FARM

N 455,000
E 1,504,500

1° 04' 16"

Al. Form 2

True North

Grid North

N 456,000
E 1,503,500

PLAN

SAN LEANDRO BAY FREEWAY

PAVEMENT ON FILL

+ 0.12 %

450' V.C.

STA. 730+55.00 B.V.C.
EL. +18.38'

STA. 735+05.00 P.R.V.C.
EL. +23.15'

STRUCTURE

STA. 739+79
PAVING NOTCH

STA. 740+31
PAVING NOTCH

900' V.C.

PAVEMENT ON FILL

STA. 744+05.00 P.R.V.C.
EL. +23.15

450' V.C.

STA. 748+55.00 E.V.C.
EL. F_1 +19.19'
EL. F_2 +19.28'

F_1 = 0.2400%
F_2 = 0.2814%

720 725 730 735 740 745 750 753

ELEVATION

PROPOSED SAN LEANDRO BAY DEVELOPMENT

N 455,000 E 1,505,500

CHANNEL

N 454,000 E 1,506,500

R = 1000'

F 744+00.00 + 23' Rt.
F 744+00.00 + 23' Lt.

STA. 744+97.09 B.C.

24'

R = 1500'
Δ = 126° 52' 59"
L = 3321.79'

N 453,000 E 1,505,500

F_2 LINE

R = 1500'

R = 1400'
Δ = 126° 52' 59"
L = 3100.34'

R = 1400'

F_1 LINE

R = 1300'

46' Median

24'

STA. 747+43.16 B.C.

STA. 749+97.09 B.C.

TO EASTSHORE FREEWAY

R = 1300'
Δ = 126° 52' 59"
L = 2878.89'

N 455,000 E 1,504,500

FARM ISLAND

DOOLITTLE DRIVE

N 453,000 E 1,505,500

PLAN

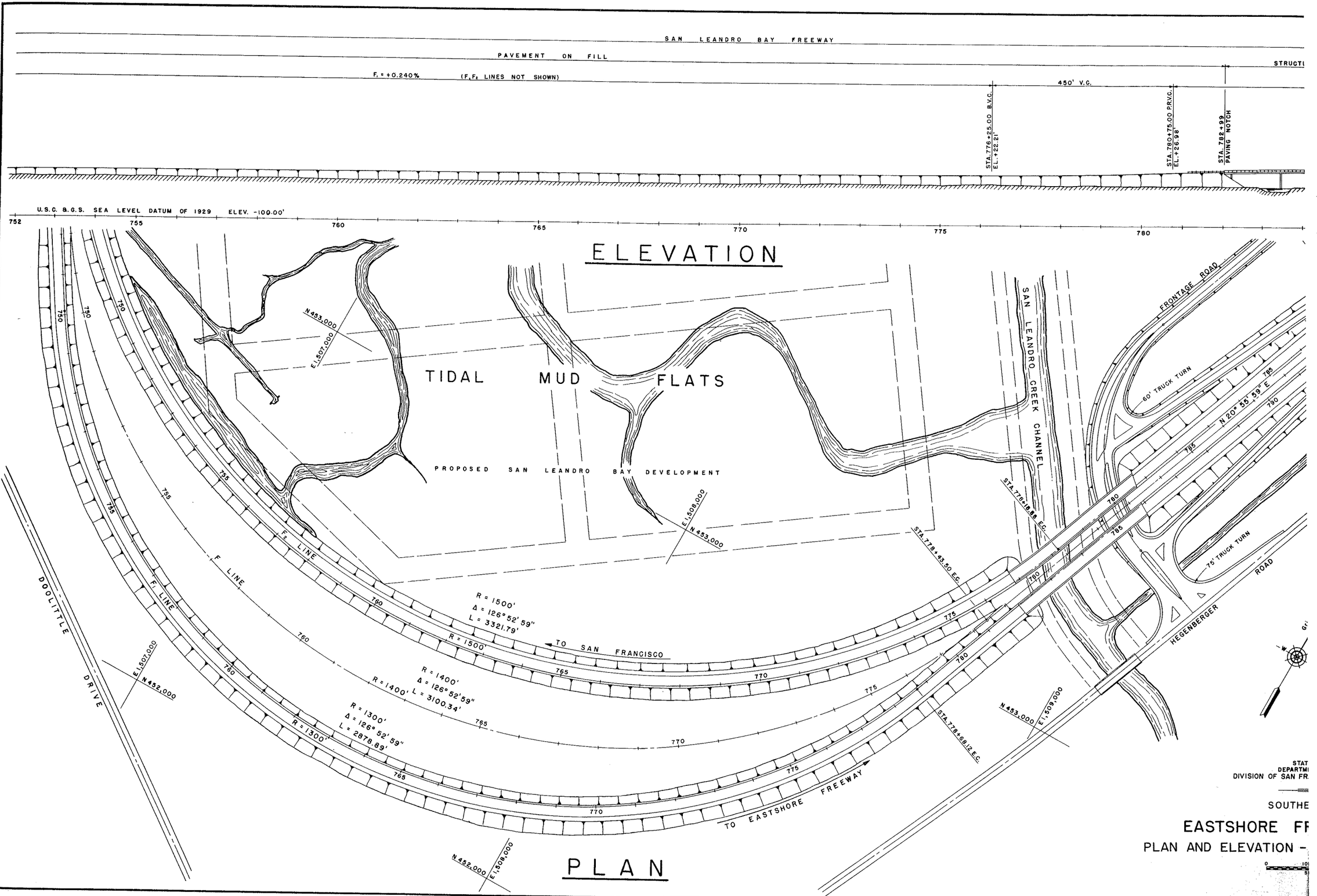
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION - STA. 704+00 TO STA. 753+00

0 100 200 300
SCALE IN FEET



STAT
DEPARTMI
DIVISION OF SAN FR

SOUTHE

EASTSHORE FF

PLAN AND ELEVATION –

0 10
SC

FIG. VI-6

SAN LEANDRO BAY FREEWAY

PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL

$F_1 = +0.240\%$ (F, F_2 LINES NOT SHOWN)

450' V.C. | 900' V.C.

STA. 776+25.00 B.V.C. EL. +22.21'

STA. 780+75.00 P.R.V.C. EL. +26.98'

STA. 782+99 PAVING NOTCH

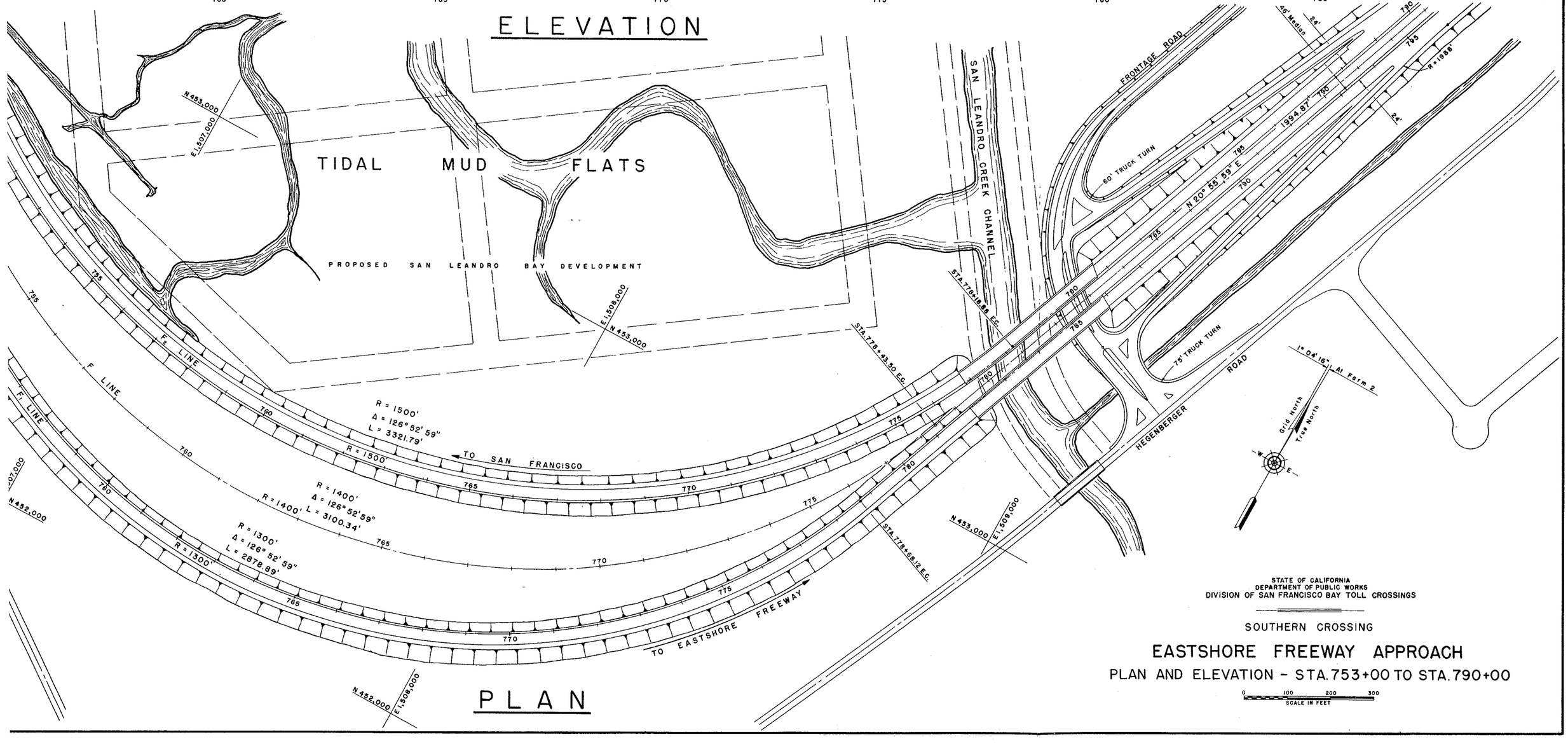
STA. 785+92 PAVING NOTCH

STA. 789+75.00 P.R.V.C. EL. +26.98'

DATUM OF 1929 ELEV. -100.00'

760 765 770 775 780 785 790

ELEVATION



PLAN

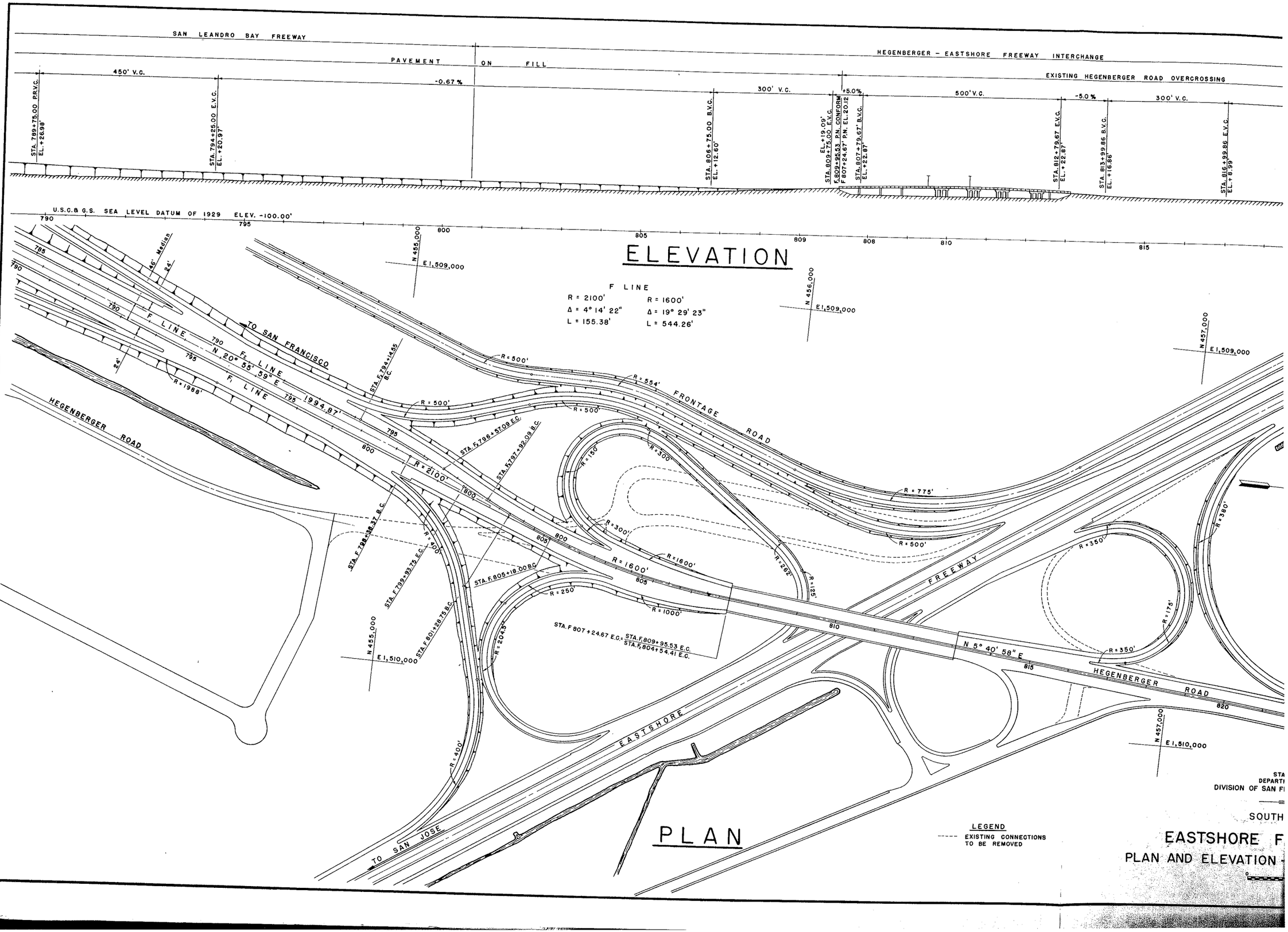
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION - STA. 753+00 TO STA. 790+00

0 100 200 300
SCALE IN FEET


SAN LEANDRO BAY FREEWAY
PAVEMENT ON FILL
HEGENBERGER – EASTSHORE FREEWAY INTERCHANGE
EXISTING HEGENBERGER ROAD OVERCROSSING
450' V.C.
-0.67%
300' V.C.
+5.0%
500' V.C.
-5.0%
300' V.C.
STA. 799+75.00 P.V.C. EL. +26.98
STA. 794+25.00 E.V.C. EL. +20.97
STA. 806+75.00 B.V.C. EL. +12.60'
EL. +19.09'
STA. 809+75.00 E.V.C.
F 809+95.53 P.N. CONFORM
F 807+24.67 P.N. EL. 20.12
STA. 807+79.67' B.V.C. EL. +22.87'
STA. 812+79.67 E.V.C. EL. +22.87'
STA. 813+99.86 B.V.C. EL. +16.86'
STA. 816+39.86 E.V.C. EL. +8.99'
U.S.C.& G.S. SEA LEVEL DATUM OF 1929 ELEV. -100.00'
790 795 800 805 809 808 810 815
ELEVATION
F LINE
R = 2100' Δ = 4° 14' 22" L = 155.38'
R = 1600' Δ = 19° 29' 23" L = 544.26'
N 455,000 E 1,509,000
N 456,000 E 1,509,000
N 457,000 E 1,509,000
46' Median
24'
F LINE
TO SAN FRANCISCO
F2 LINE N 20° 55' 59" E 1994.87'
F1 LINE
R = 1988'
STA. F 794+15.55 B.C.
R = 500'
R = 554'
FRONTAGE ROAD
STA. F 796+57.09 E.C.
STA. F 797+92.09 B.C.
R = 2100'
R = 150'
R = 300'
R = 775'
R = 500'
HEGENBERGER ROAD
STA. F 798+38.37 B.C.
R = 400'
STA. F 799+93.74 E.C.
STA. F 805+18.00 B.C.
R = 1600'
R = 1600'
R = 300'
R = 262'
R = 125'
R = 250'
R = 1000'
R = 204.32'
STA. F 801+28.75 B.C.
STA. F 807+24.67 E.C. = STA. F 809+95.53 E.C.
STA. F 804+54.41 E.C.
FREEWAY
R = 350'
R = 175'
R = 350'
R = 380'
N 5° 40' 58" E
HEGENBERGER ROAD
EASTSHORE
R = 400'
TO SAN JOSE
PLAN
LEGEND
EXISTING CONNECTIONS TO BE REMOVED
STA
DEPARTI
DIVISION OF SAN FI
SOUTH
EASTSHORE F
PLAN AND ELEVATION -

SAN LEANDRO BAY FREEWAY — HEGENBERGER – EASTSHORE FREEWAY INTERCHANGE

PAVEMENT ON FILL — EXISTING HEGENBERGER ROAD OVERCROSSING — EXISTING HEGENBERGER ROAD — APPROACH

V.C. -0.67% | 300' V.C. | +5.0% | 500' V.C. | -5.0% | 300' V.C. | -0.248%

STA. 794+25.00 E.V.C. EL. +20.97'
STA. 806+75.00 B.V.C. EL. +12.60'
STA. 809+75.00 E.V.C. EL. +19.09'
F 809+95.53 P.N. CONFORM F 807+24.67' P.N. EL. 20.12
STA. 807+79.67' B.V.C. EL. +22.87'
STA. 812+79.67 E.V.C. EL. +22.87'
STA. 813+99.86 B.V.C. EL. +16.66'
STA. 816+93.86 E.V.C. EL. +8.39'
STA. 825+00 END EASTSHORE FREEWAY APPROACH

LEVEL DATUM OF 1929 ELEV. -100.00'

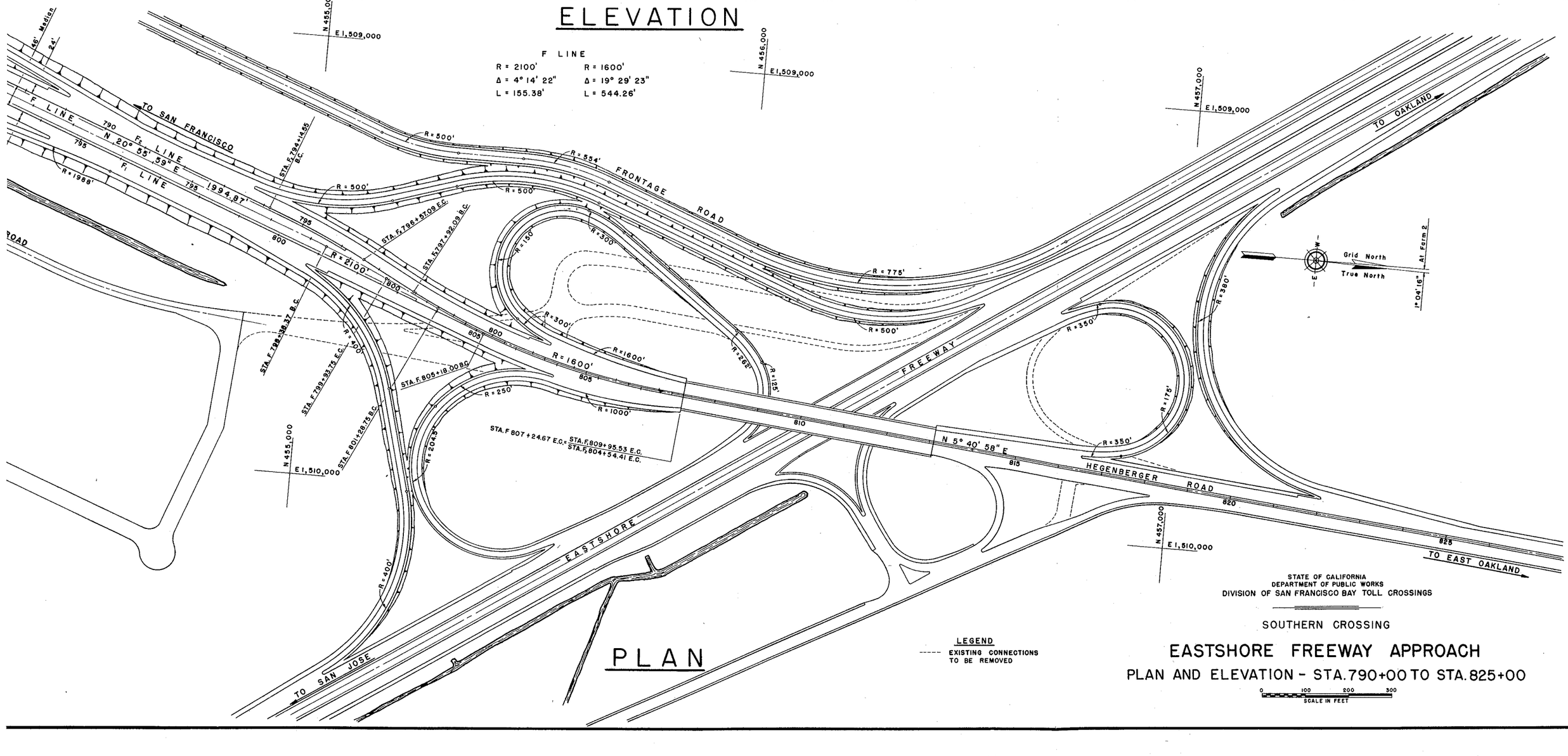
795 800 805 809 808 810 815 820 825

ELEVATION

F LINE

R = 2100' Δ = 4° 14' 22" L = 155.38'

R = 1600' Δ = 19° 29' 23" L = 544.26'



PLAN

LEGEND

---- EXISTING CONNECTIONS TO BE REMOVED

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

EASTSHORE FREEWAY APPROACH

PLAN AND ELEVATION – STA. 790+00 TO STA. 825+00

0 100 200 300
SCALE IN FEET

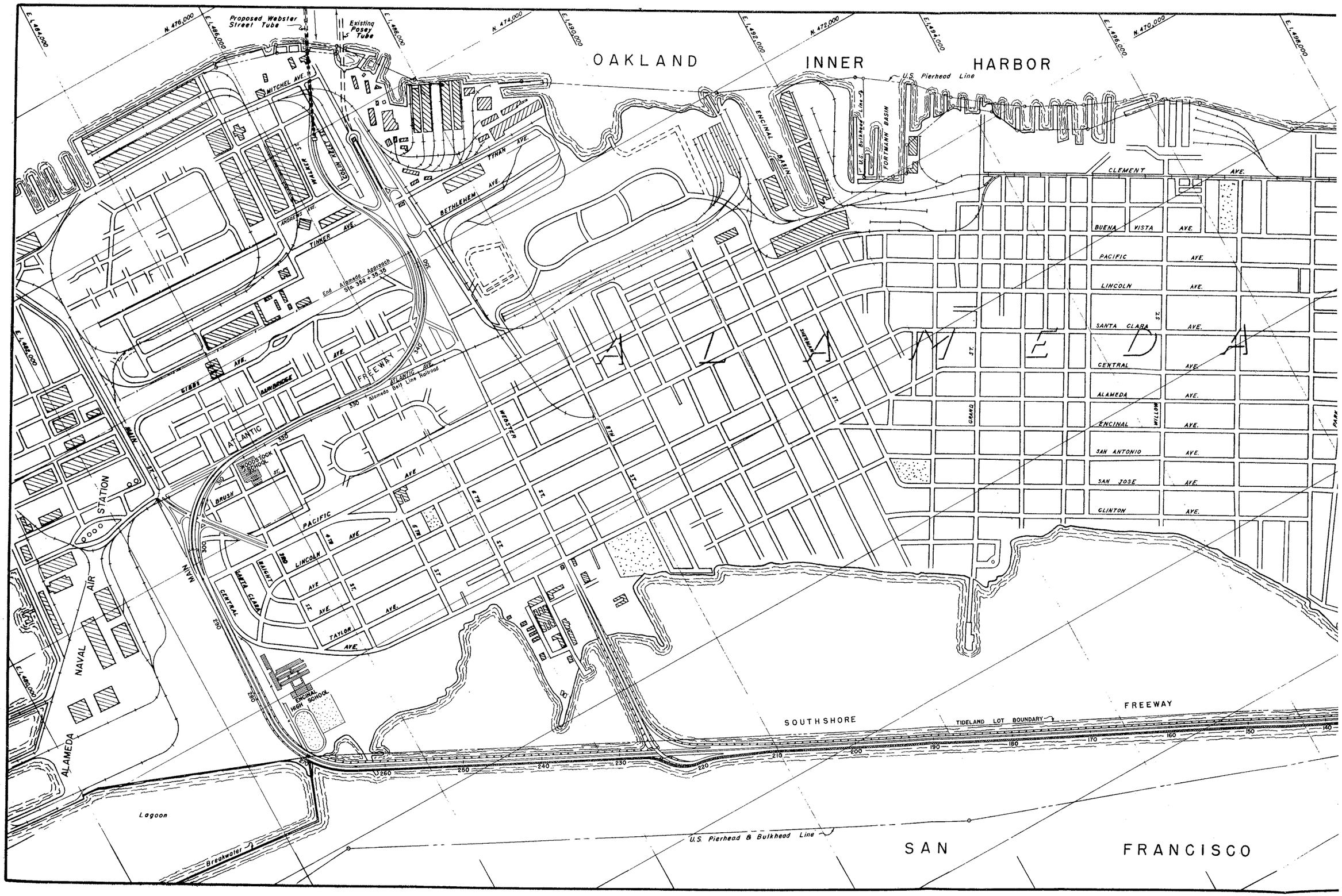
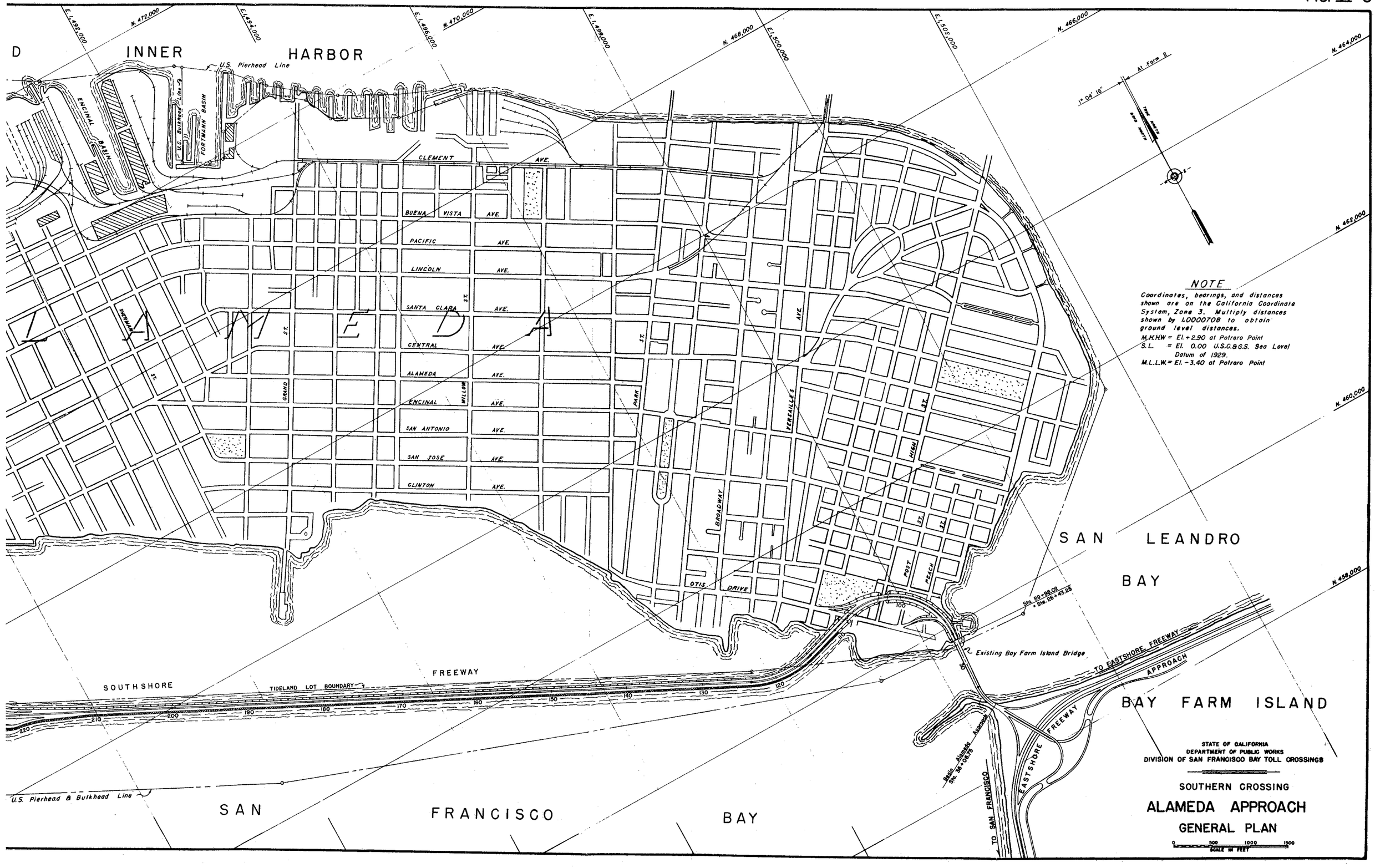

OAKLAND
INNER
HARBOR
Proposed Webster Street Tube
Existing Posey Tube
U.S. Pierhead Line
U.S. Bulkhead Line
FORTMANN BASIN
ENCINAL BASIN
MITCHEL AVE.
MATHEWS ST.
CLAY HEAD ST.
TYHAN AVE.
BETHLEHEM AVE.
ANDREWS AVE.
TIMMER AVE.
End Alameda Approach Sta. 342 + 56.36
STOBB AVE.
ARMBRUSTER AVE.
FREEWAY
ATLANTIC AVE.
Alameda Belt Line Railroad
ATLANTIC
Woodstock School
BRUSH ST.
MAIN ST.
DOCK
PACIFIC AVE.
LINCOLN AVE.
SANTA CLARA AVE.
CENTRAL AVE.
TAYLOR AVE.
WEBSTER ST.
6TH ST.
8TH ST.
SHERMAN ST.
GRAND ST.
WILLOW ST.
PARK ST.
CLEMENT AVE.
BUENA VISTA AVE.
PACIFIC AVE.
LINCOLN AVE.
SANTA CLARA AVE.
CENTRAL AVE.
ALAMEDA AVE.
ENCINAL AVE.
SAN ANTONIO AVE.
SAN JOSE AVE.
CLINTON AVE.
NAVAL AIR STATION
ALAMEDA
ENCINAL HIGH SCHOOL
SOUTHSHORE
TIDELAND LOT BOUNDARY
FREEWAY
Lagoon
Breakwater
U.S. Pierhead & Bulkhead Line
SAN
FRANCISCO
E. 1,484,000
E. 1,486,000
E. 1,488,000
E. 1,490,000
E. 1,492,000
E. 1,494,000
E. 1,496,000
E. 1,498,000
N. 476,000
N. 474,000
N. 472,000
N. 470,000

FIG. VI-8


INNER HARBOR
U.S. Pierhead Line
ENCINAL BASIN
U.S. Bulkhead Line
FORTMANN BASIN
CLEMENT AVE.
BUENA VISTA AVE.
PACIFIC AVE.
LINCOLN AVE.
SANTA CLARA AVE.
CENTRAL AVE.
ALAMEDA AVE.
ENCINAL AVE.
SAN ANTONIO AVE.
SAN JOSE AVE.
CLINTON AVE.
SHERMAN ST.
GRAND ST.
WILLOW ST.
PARK ST.
VERSAILLES AVE.
HIGH ST.
BROADWAY
POST ST.
PEACH ST.
OTIS DRIVE
N. 472,000
E. 1,492,000
E. 1,494,000
N. 470,000
E. 1,496,000
N. 468,000
E. 1,498,000
E. 1,500,000
E. 1,502,000
N. 466,000
N. 464,000
N. 462,000
N. 460,000
N. 458,000
At Form 2
1° 04' 16"
TRUE NORTH
GRID NORTH
NOTE
Coordinates, bearings, and distances shown are on the California Coordinate System, Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.
M.H.H.W. = El. +2.90 at Potrero Point
S.L. = El. 0.00 U.S.C.&G.S. Sea Level Datum of 1929.
M.L.L.W. = El. -3.40 at Potrero Point
SOUTHSHORE FREEWAY
TIDELAND LOT BOUNDARY
220
210
200
190
180
170
160
150
140
130
120
110
100
U.S. Pierhead & Bulkhead Line
SAN FRANCISCO BAY
SAN LEANDRO BAY
Sta. 89+98.08 = Sta. 26+42.25
Existing Bay Farm Island Bridge
TO EASTSHORE FREEWAY APPROACH
BAY FARM ISLAND
Bent Alameda Approach Sta. 36+08.75
EASTSHORE FREEWAY
TO SAN FRANCISCO
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS
SOUTHERN CROSSING
ALAMEDA APPROACH
GENERAL PLAN
0 500 1000 1500
SCALE IN FEET

ELEVATION

EXISTING BAY FARM ISLAND BRIDGE

SOUTHSHORE FREEWAY

PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL

BEGIN ALAMEDA APPROACH STA. 36+06.75

STA. 26+43.25 = STA. 89+98.02

−1.93% | 500' V. C. | 500' V. C. | +0.15% | 500' V. C. | 675' V. C.

STA. 91+27 B.V.C. EL. + 20.91

STA. 96+27 P.R.V.C. EL. + 22.29'

STA. 101+27 E.V.C. EL. + 28.87'

℄ HIGH ST.

℄ OTIS DR.

STA. 108+77 B.V.C. EL. + 30.00

STA. 113+77 P.R.V.C. EL. + 22.55'

STA. 120+52 E.V.C. EL. + 12.00'

U.S.C. & G.S. SEA LEVEL DATUM OF 1929 EL. −100.00'

90 95 100 105 110 115 120

PLAN AND EL

SAN LEANDRO BAY

SAN FRANCISCO BAY

EXISTING BAY FARM ISLAND BRIDGE

S 4° 36' 31" W

TO BAY FARM ISLAND

STA. 26+43.25 = STA. 89+98.02

STA. 90+91.18 B.C.

R=850' Δ=112°44'28" L=1672.55'

E 1,493,000 N 460,000

TIDELAND LOT BOUNDARY

R/W LINE

R=1200' Δ=44°18'59" L=928.16'

STA. 114+26.88 B.C.

S 71° 52' 03" W 663.15

STA. 107+93.73 E.C.

R/W LINE

R=650'

R=400'

R=50'

OTIS DRIVE

CLAY ST.

CALHOUN ST.

KRUSI PARK

N 461,000 E 1,493,000

N 461,000 E 1,492,000

MARKET ST.

PEACH ST.

POST ST.

WASHINGTON ST.

HIGH ST.

FILLMORE ST.

COURT ST.

MOUND ST.

VERSAILLES AVE.

FRANK OTIS PUBLIC SCHOOL

ALAMEDA

Grid North

True North

At Farm 2

1° 04' 16"

SOUTHSHORE FREEWAY

PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL

500' V. C. | 500' V. C. | +0.15% | 500' V. C. | 675' V. C. | LEVEL AT EL. +12.00'

STA. 96+27 P.R.V.C. EL. + 22.29'
STA. 101+27 E.V.C. EL. +28.87'
℄ HIGH ST.
℄ OTIS DR.
STA. 108+77 B.V.C. EL. + 30.00'
STA. 113+77 P.R.V.C. EL. + 22.58'
STA. 120+58 E.V.C. EL. + 12.00'

EL. -100.00'

95 100 105 110 115 120 125

ELEVATION

PLAN

SAN FRANCISCO BAY

ISTING BAY FARM ISLAND BRIDGE

TO BAY FARM ISLAND

S 4° 33' 13" W

STA. 86+43.25 = STA. 89+98.02

STA. 90+91.18 B.C.

R=850'
Δ=112°44'28"
L=1672.55'

E 1,497,500 N 460,000

TIDELAND LOT BOUNDARY

N 63° 48' 58" W 13,990.99'

TO OAKLAND

24' MEDIAN

24'

24'

STA. 123+55.04 E.C.

R=1200'
Δ=44°18'59"
L=928.16'

E 1,498,000 N 461,000

R/W LINE

663.15'

S 71° 52' 03" W

STA. 114+26.98 B.C.

STA. 107+63.73 E.C.

R=850'

R=330'

R=400'

R=50'

OTIS DRIVE

CLAY ST.

CALHOUN ST.

KRUSI PARK

FRANK OTIS PUBLIC SCHOOL

FILLMORE ST.

WASHINGTON ST.

MARKET ST.

PEACH ST.

POST ST.

HIGH ST.

COURT ST.

MOUND ST.

VERSAILLES AVE.

ALAMEDA

Grid North
True North
16"
At Farm 2

E 1,498,000
61,000

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

ALAMEDA APPROACH

PLAN AND ELEVATION - STA. 89+98 TO STA. 127+00

0 100 200 300
SCALE IN FEET

WEBSTER STREET CONNECTION

PAVEMENT ON FILL | STRUCTURE | PAVEMENT ON FILL

350' V.C. | 700' V.C. | 350' V.C. | +0.12%

STA. 214+85 EL. +11.40' — B.V.C. STA. 218+00 EL. +11.40' — P.R.V.C. STA. 221+50 EL. +21.90' — ℄ SOUTHSHORE FREEWAY — P.R.V.C. STA. 228+50 EL. +22.30' — E.V.C. STA. 232+00 EL. +12.21' — B.V.C. STA. 247+00 EL. +14.01'

U.S.C. & G.S. SEA LEVEL DATUM OF 1929 EL. -100.00'

220 225 230 235 240 245

ELEVATION

PLAN

GRID NORTH
TRUE NORTH
1°04' W.
AT FARM 2

E 1,486,500
N 465,000
22' MEDIAN
24'
TO OAKLAND
24'
E 1,486,500
N 465,000
24'
10' MEDIAN
R/W LINE
E 1,486,500
N 467,000
230 235 240 245
230
225
24'
R/W LINE
R 500'
R 800'
3,990.93'
N 63° 48.56' W
220
225
TRAINING (INACTIVE)
SERVICE
U.S. MARITIME
R/W LINE
SOUTHSHORE FREEWAY
215
220
TIDELAND LOT BOUNDARY
R/W LINE
TO BAY FARM ISLAND
SAN
FRANCISCO
BAY
E 1,487,500
N 465,000
E 1,487,500
N 465,000
E 1,487,500
N 467,000
PORTOLA AVE.

PLAN AND EL

WEBSTER STREET CONNECTION

EXISTING WEBSTER STREET

ON FILL | STRUCTURE | PAVEMENT ON FILL

350' V.C. | 700' V.C. | 350' V.C. | +0.12% | 200' V.C. | +1.90% | 100' V.C. | CONNECTION | CONFORM

STA. 221+50 P.R.V.C. EL. +21.90

℄ SOUTHSHORE FREEWAY

STA. 228+50 P.R.V.C. EL. +22.30

STA. 232+00 E.V.C. EL. +12.21'

STA. 247+00 B.V.C. EL. +14.01'

STA. 249+00 E.V.C. EL. +16.03'

STA. 250+50 EL. +16.86'

STA. 251+50 E.V.C.

STA. 252+00 END WEBSTER STREET

9 EL. -100.00'

220 225 230 235 240 245 250

ELEVATION

PLAN

TO OAKLAND

22' MEDIAN

24'

E 1,486,500

N 465,000

N 467,000

10' MEDIAN

R/W LINE

STATION DRIVE

WEBSTER ST.

AVE.

CENTRAL

PAGE ST

TRAINING (INACTIVE)

ANDERSON

SERVICE

MARITIME

U.S.

WASHINGTON

PARK

E 1,487,500

N 466,000

PORTOLA AVE.

R=500'

R=800'

13,990.99'

N 63°46'58" W

SOUTHSHORE FREEWAY

TIDELAND LOT BOUNDARY

TO BAY FARM ISLAND

AT FARM 2

ID NORTH

UE NORTH

BAY

FRANCISCO

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

ALAMEDA APPROACH

PLAN AND ELEVATION - WEBSTER STREET CONNECTION

0 100 200 300
SCALE IN FEET

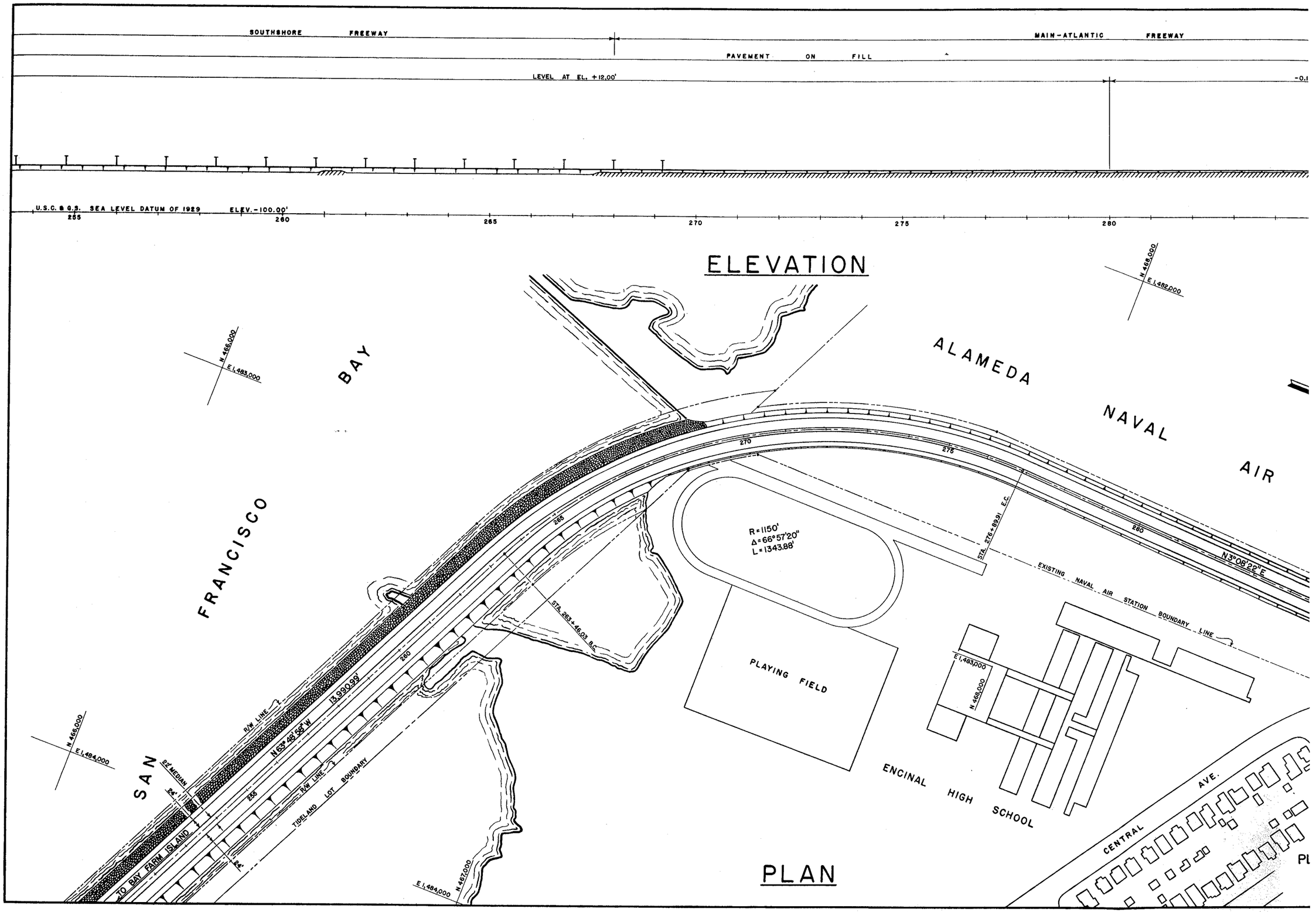
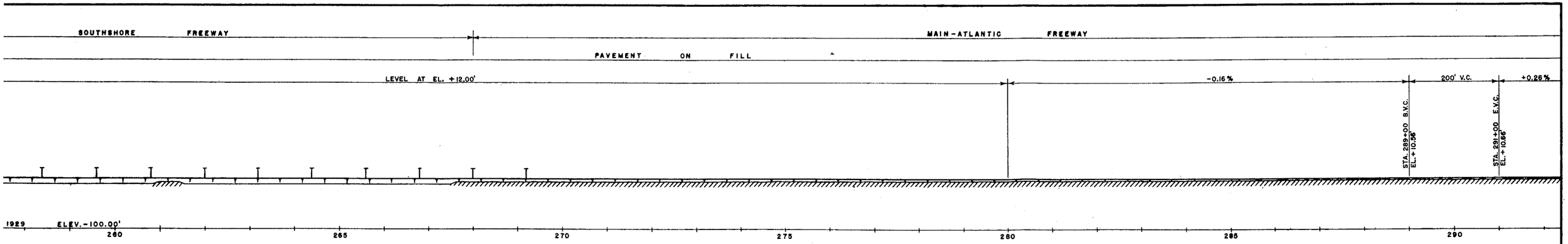
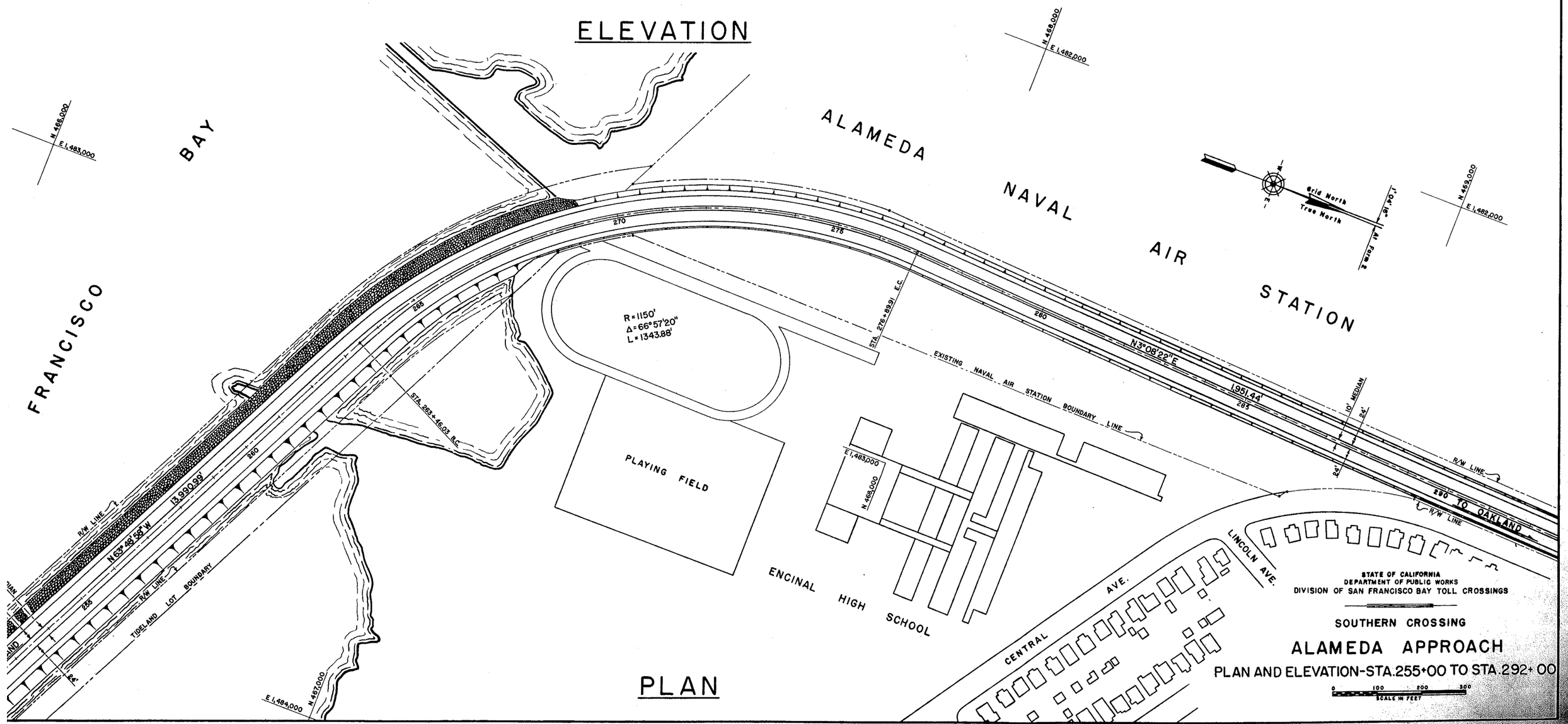

SOUTHSHORE FREEWAY
MAIN-ATLANTIC FREEWAY
PAVEMENT ON FILL
LEVEL AT EL. +12.00'
U.S.C. & G.S. SEA LEVEL DATUM OF 1929 ELEV. -100.00'
255
260
265
270
275
280
ELEVATION
N 466,000
E 1,483,000
N 466,000
E 1,482,000
SAN FRANCISCO BAY
ALAMEDA NAVAL AIR
R=1150'
Δ=66°57'20"
L=1343.88'
STA. 276+89.91 E.C.
N3°08'22"E
EXISTING NAVAL AIR STATION BOUNDARY LINE
PLAYING FIELD
E 1,483,000
N 465,000
ENCINAL HIGH SCHOOL
CENTRAL AVE.
STA. 263+46.03 E.C.
R/W LINE
N 63° 48' 55" W
13,930.99'
92' MEDIAN
TIDELAND LOT BOUNDARY
TO BAY FARM ISLAND
N 465,000
E 1,484,000
E 1,484,000
N 467,000
PLAN

FIG. VI-11

ELEVATION





PLAN

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

ALAMEDA APPROACH

PLAN AND ELEVATION-STA. 255+00 TO STA. 292+00

0 100 200 300
SCALE IN FEET

MAIN – ATLANTIC FREEWAY

ATLANTIC AVE. VIADUCT

PAVEMENT ON FILL

+0.26 %

400' V.C.

STA. 295+50 B.V.C.
EL. + 11.83

+3.05 %

STA. 299+50 E.V.C.
EL. + 18.45

600' V.C.

STA. 304+50 B.V.C.
EL. + 34.15

LEVEL
EL. + 43.30'

STA. 310+50 E.V.C.
EL. + 43.30

STA. 312+50 B.V.C.
EL. + 43.30

500' V.C.

-2.24 %

STA. 317+50 P.R.V.C.
EL. + 37.71

300' V.C.

STA. 320+50 E.V.C.
EL. + 34.65

U.S.C. & G.S. SEA LEVEL DATUM OF 1929 EL. – 100.00'

295 300 305 310 315 320

ELEVATION

PLAN

ALAMEDA NAVAL AIR STATION QUONSET HUT HOUSING

NAVAL AIR STATION

E. 1,482,500
N 470,500

R=1000'

R=1200'

L=R1200'

R=1200'
Δ=86°40'50"
L=1815.43'

WESTERN HOUSING PROJECT
CAL. NO. 4820

WOODSTOCK HOUSING PROJECT
CAL. NO. 4112

WOODSTOCK SCHOOL

STA. 314+56.78 E.C.

STA. 296+41.35 B.C.

N 89°49'12" E 503.84'

SEGREGATION LINE

STA. 319+50.62 B.C.

R=6100'
Δ=4°44'58"
L=505.65'

STA. 324+62.27 E.C.

S 85°25'50" E 696.27'

E. 1,484,500
N 471,500

CHIPMAN HOUSING PROJECT
CAL. NO. 4114

PLAN A

TO BAY FARM ISLAND
N 3°08'22" E 1951.44'

R/W LINE

10' MEDIAN

24'

GRIDLEY COURT
STREET
HOPKINS COURT
NAVAL AIR STATION
CHAUNCEY COURT
KANE STREET
CIVILIAN COURT
BAINBRIDGE COURT
AMMEN COURT
NIBLACK AVE.
HOUSING COURT
LAWRENCE COURT
MAHAN COURT
PROJECT CAL.
CRAVEN COURT
MAPLE STREET
BRUSH STREET
THIRD STREET
CYPRESS STREET
SECOND STREET
PACIFIC AVE.
SPRUCE STREET
CENTRAL AVE.
SANTA CLARA AVE.
EAGLE AVE.
ALAMEDA BELT LINE RAILROAD

FIG. VI-12

MAIN - ATLANTIC FREEWAY

ATLANTIC AVE. VIADUCT

FILL

400' V.C. | + 3.05 % | 600' V.C. | LEVEL EL. + 43.30' | 500' V.C. | - 2.24 % | 300' V.C. | + 0.20 % | 200' V.C. | - 0.19 %

STA. 299+50 E.V.C. EL. + 18.45

STA. 304+50 B.V.C. EL. + 34.18

STA. 310+50 E.V.C. EL. + 43.30

STA. 312+50 B.V.C. EL. + 43.30

STA. 317+50 P.R.V.C. EL. + 37.71

STA. 320+50 E.V.C. EL. + 34.85

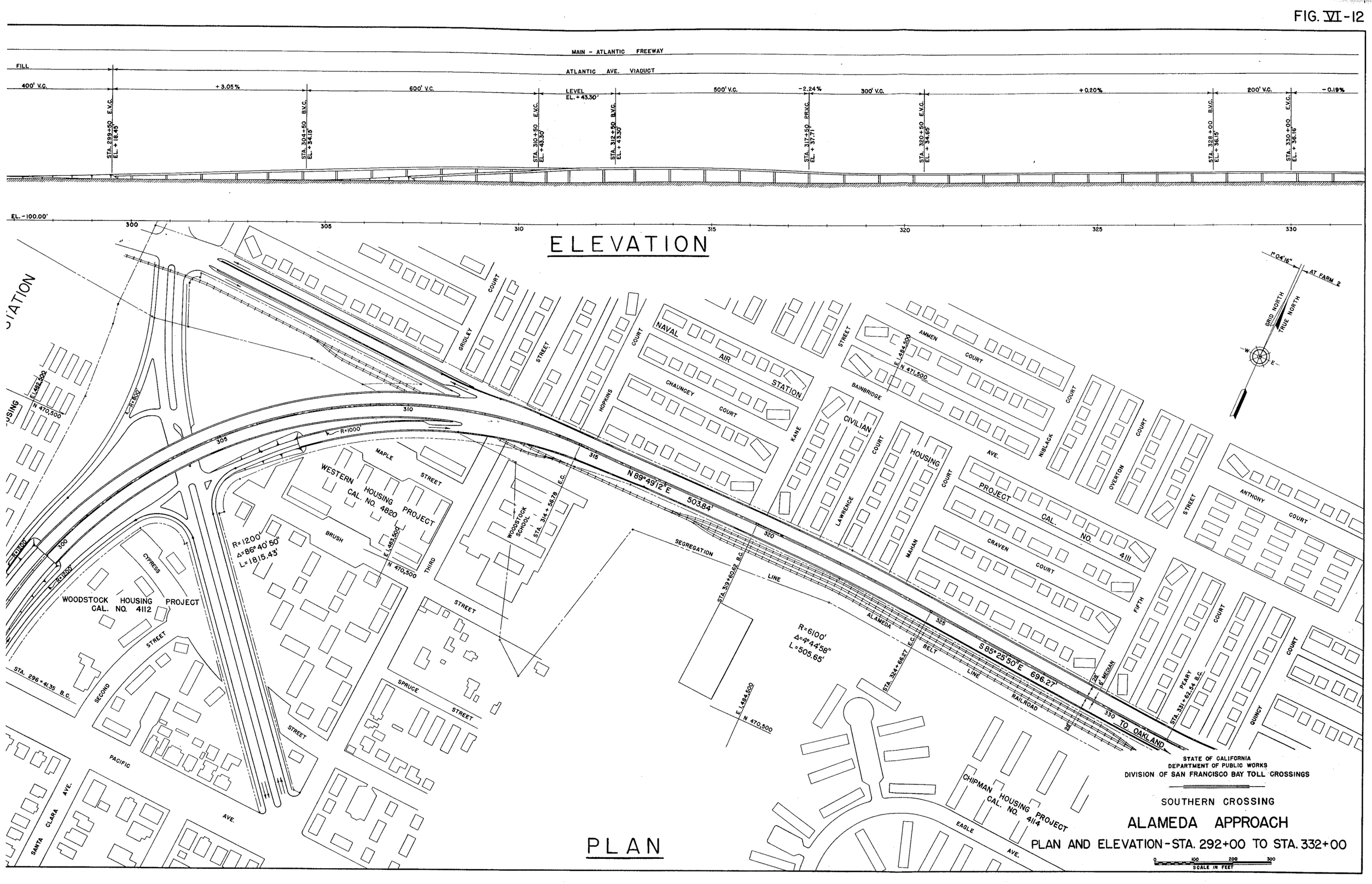
STA. 328+00 B.V.C. EL. + 36.15

STA. 330+00 E.V.C. EL. + 36.16

EL. - 100.00'

300 305 310 315 320 325 330

ELEVATION



PLAN

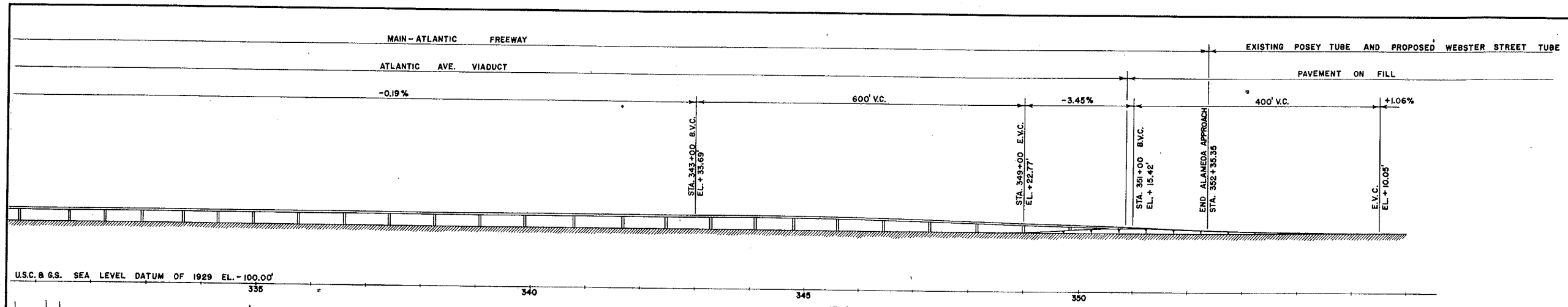
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

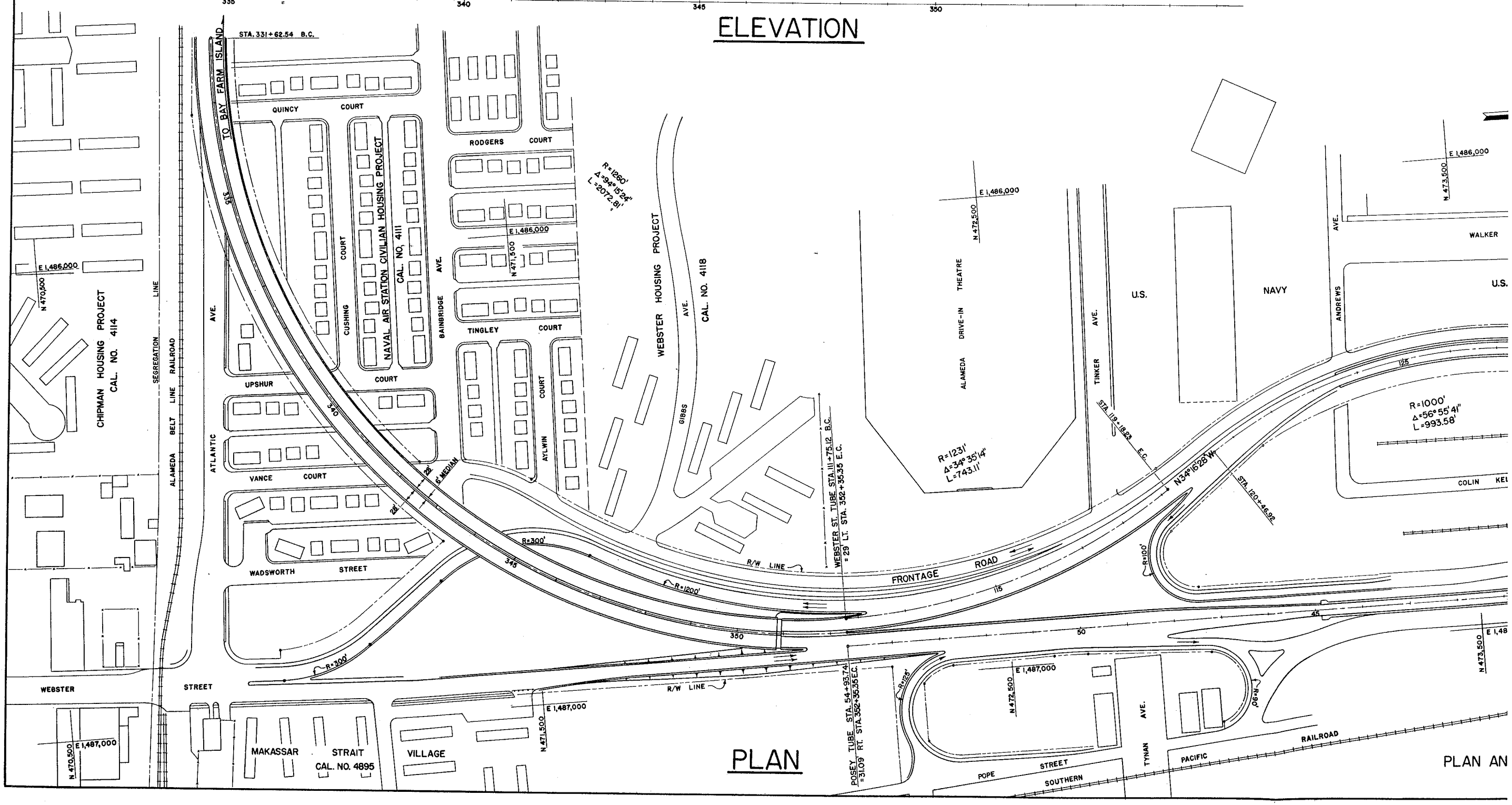
ALAMEDA APPROACH

PLAN AND ELEVATION - STA. 292+00 TO STA. 332+00

0 100 200 300
SCALE IN FEET

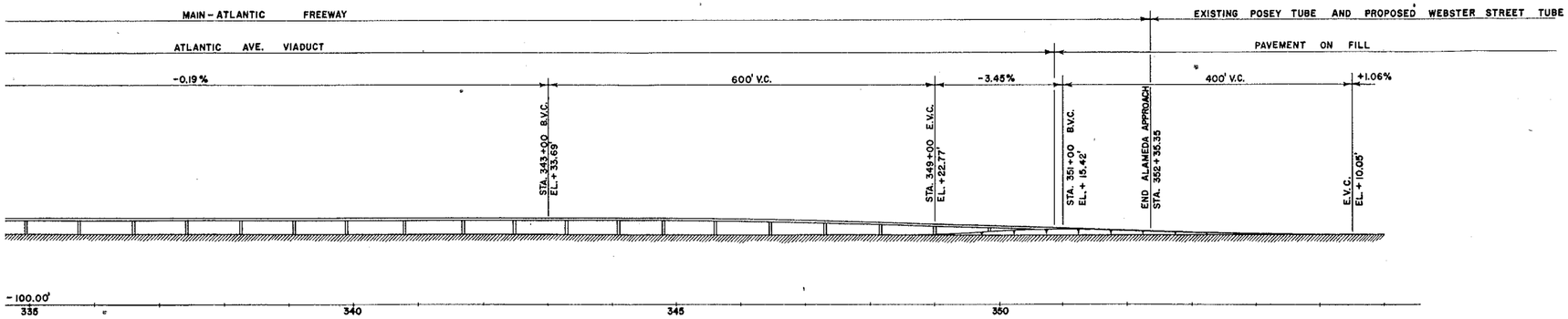


ELEVATION

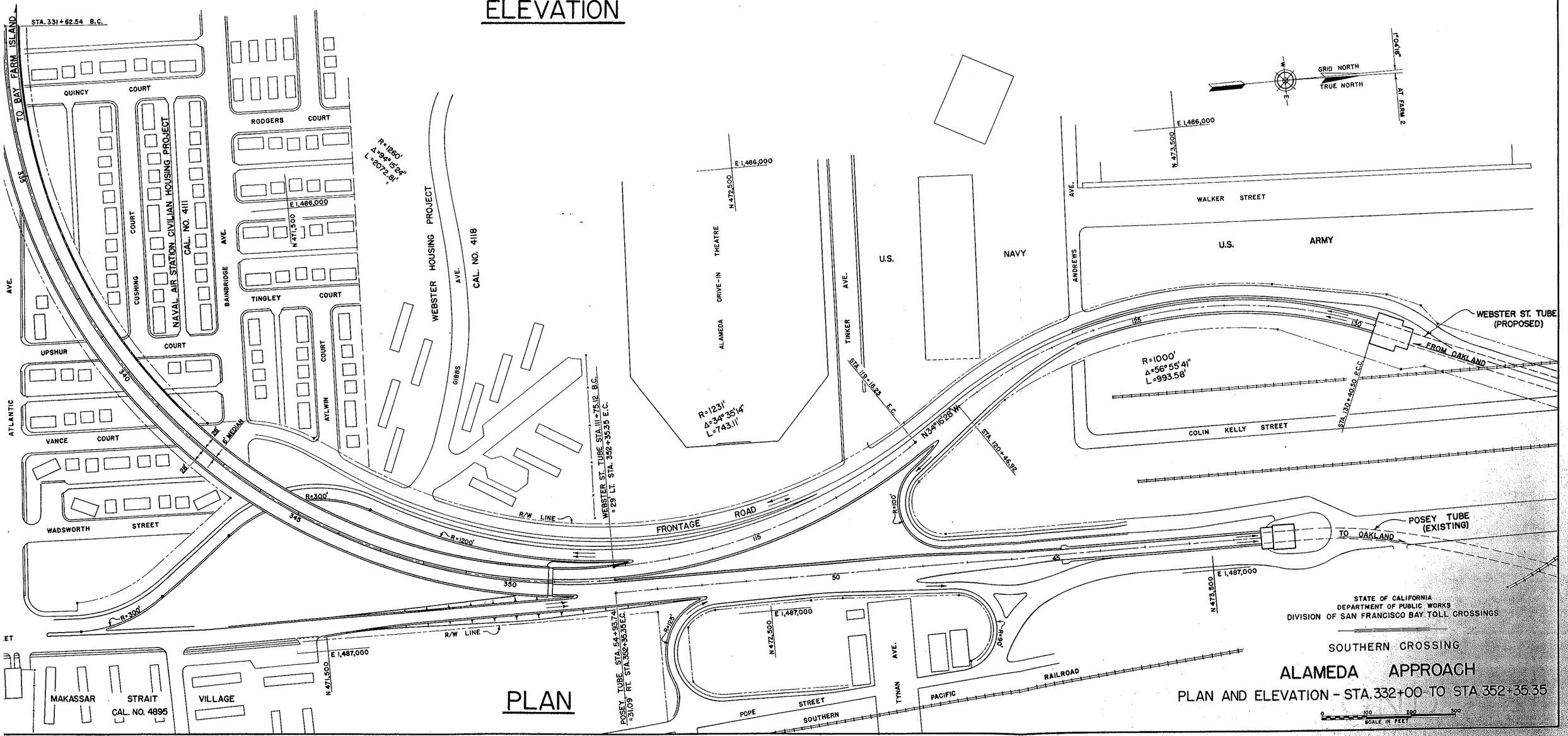


PLAN

PLAN AN



ELEVATION



PLAN

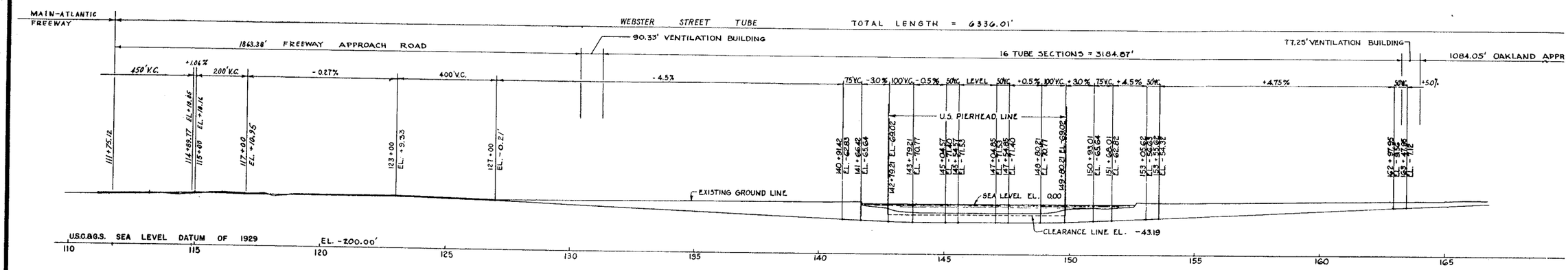
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

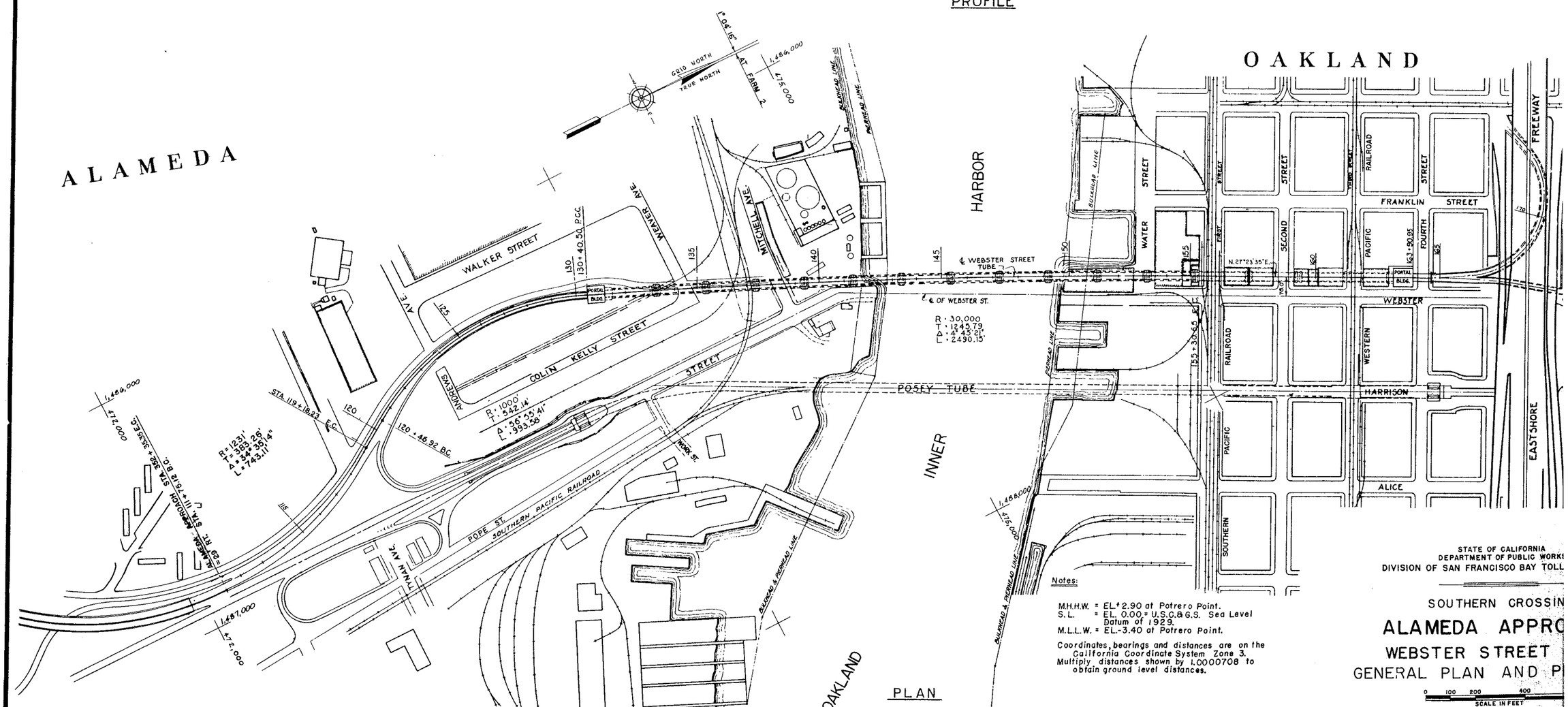
ALAMEDA APPROACH

PLAN AND ELEVATION - STA. 332+00 TO STA. 352+35.35

SCALE IN FEET 0 100 200 300



PROFILE



PLAN

Notes:

M.H.H.W. = EL. 2.90 at Potrero Point.
S.L. = EL. 0.00 = U.S.C.&G.S. Sea Level Datum of 1929.
M.L.L.W. = EL. -3.40 at Potrero Point.

Coordinates, bearings and distances are on the California Coordinate System Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL

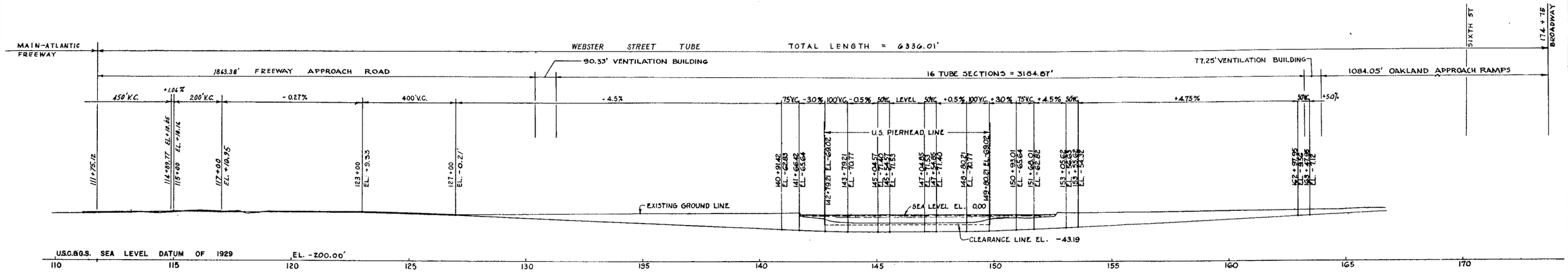
SOUTHERN CROSSIN

ALAMEDA APPRO

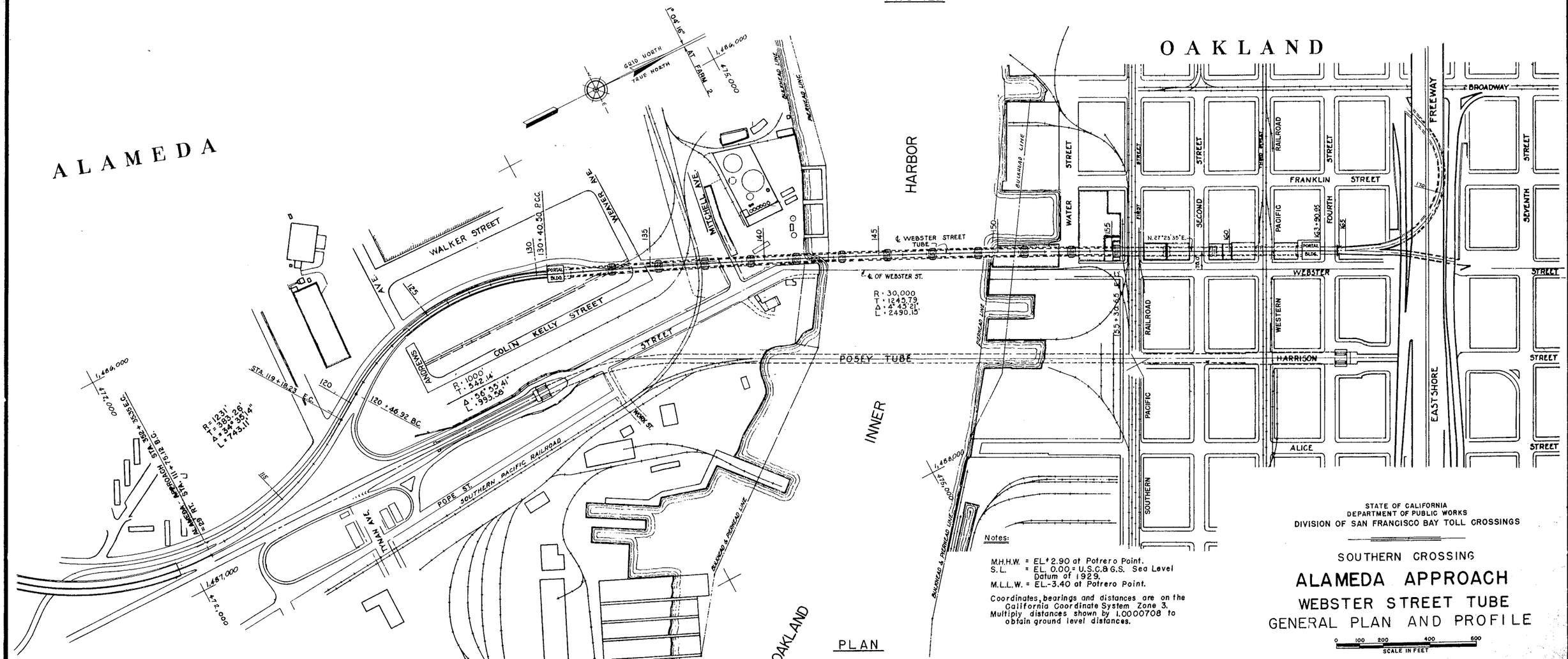
WEBSTER STREET

GENERAL PLAN AND P

0 100 200 400
SCALE IN FEET



PROFILE



PLAN

Notes:

M.H.H.W. = EL. +2.90 at Potrero Point.
S.L. = EL. 0.00 = U.S.C.&G.S. Sea Level Datum of 1929.
M.L.L.W. = EL.-3.40 at Potrero Point.

Coordinates, bearings and distances are on the California Coordinate System Zone 3. Multiply distances shown by 1.0000708 to obtain ground level distances.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS

SOUTHERN CROSSING

ALAMEDA APPROACH
WEBSTER STREET TUBE
GENERAL PLAN AND PROFILE

0 100 200 400 600
SCALE IN FEET